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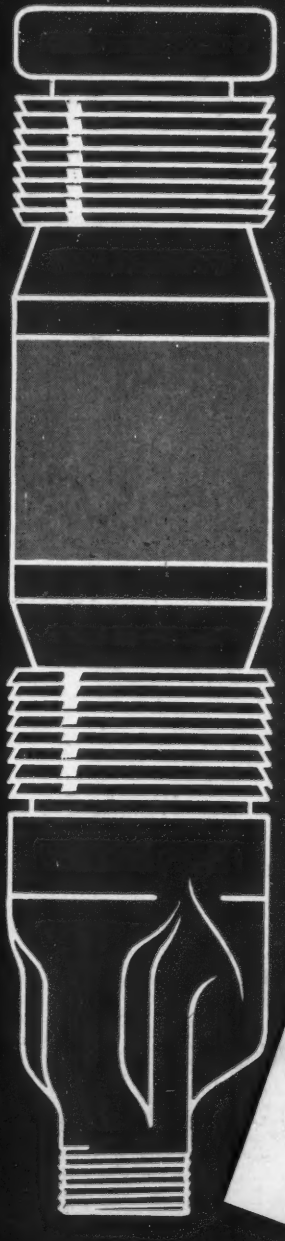

All of the applications for the Baker Cement Retainer are illustrated and described in detail in the Baker Broadcast No. 17-A, a comprehensive 40-page treatise gladly sent upon request. Complete information will also be found in the Baker Section of your Composite Catalog.

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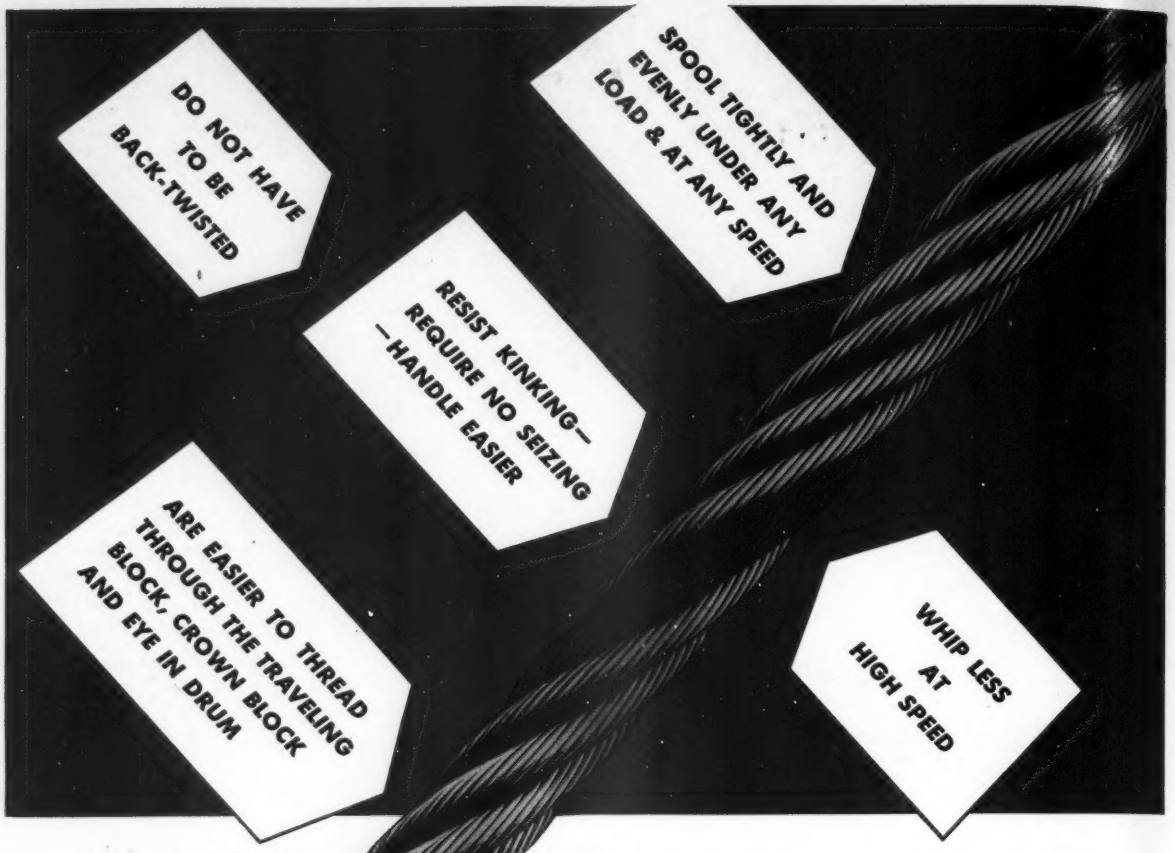
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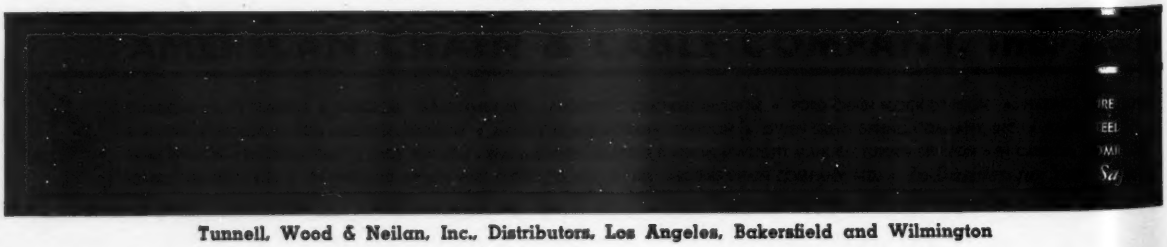

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OIL WORLD
and Petroleum Industry

THE AUTHORITY ON THE CALIFORNIA OIL INDUSTRY

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September 7, 1939

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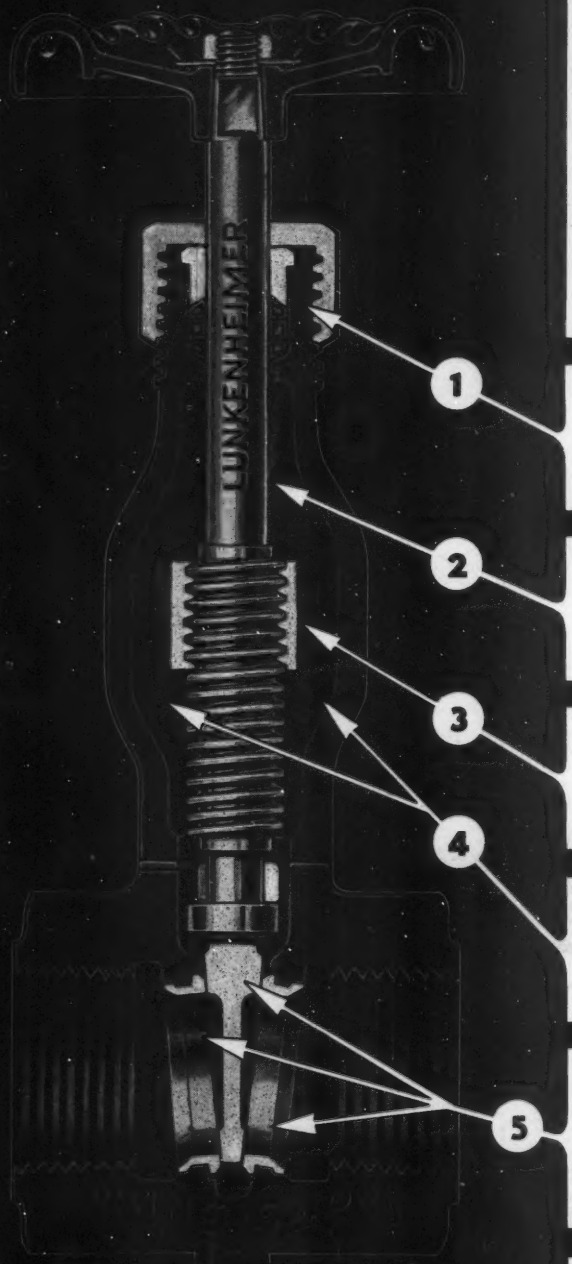

Fig. 1640

LUNKENHEIMER
Fig. 1640
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Fire Prevention, Protection Development

In the California Oil Industry

Geo. F. Prussing, Safety Engineer
Union Oil Co. of California

It takes a serious loss to create a sense of future caution. Prior to 1920 no such loss had occurred in the oil industry on the Pacific Coast and because of it no great amount of thought had been given either to scientific fire protection or to any far sighted program of fire insurance. There had been some fires, but they had been isolated and had involved neither large values nor great public concern. True enough, when chemical fire fighting equipment became a merchantable commodity through the introduction of licorice as a stabilizer of chemical foam, the Pacific Coast oil companies followed the lead of Standard of California in buying and installing solution systems, particularly for their refineries and large tank farms and metropolitan bulk marketing stations. But this was stop-loss defense rather than fire prevention.

With the rapid and simultaneous development of several flush oil fields in the five years following the discovery of Signal Hill, the picture changed. Great quantities of oil of high gasoline content were being produced and this production was under no sort of control. Hundreds of producing companies came into being, each committed by lease agreements to produce fortunes for small or large land owners before their neighbors got it away from under them. The result was a wave of tank building such as the Coast had never seen before. The older companies, having just gone through a period of famine, when oil was being shipped in by tanker and trainload from Texas, saw the opportunity of storing these great quantities of oil, which lack of legal regulation or co-operative agreement, were pouring from the earth.

For many years it had been the custom in California to store fuel oil, either the natural low gravity crudes or the topped residue from the refineries, in earthen reservoirs, lined or unlined, with or without benefit of roofs. These saucerlike tanks were several hundred feet in extent, some artificially hollowed out of the ground and many nothing more than dammed-off natural basins. Only one of these had ever burned.

Now, however, it became necessary, if the flood of oil was to be saved, to put these reservoirs into crude oil service and in addition to build more and more of them. The result was that upwards of fifty million barrels of crude found its way in these great cisterns, which now had grown until they averaged five hundred feet in diameter and in one instance had a capacity of more than four million barrels.

It was while this wave of flush production was filling the available storage on the Coast that a series of fires commenced and soon brought to the industry a realization that the oil reserve above ground was a liability as well as an asset. In 1923 an incendiary fire destroyed an oil reservoir near the town of San Pedro. This fire was extremely spectacular, and because of the amount of oil involved became for a time the greatest oil loss the industry had ever suffered. Situated near to a busy harbor and on a hilltop, this fire had elements of public concern that could not be overlooked. The company involved became very much interested in fire protection and was probably the second major company to organize an engineering service specializing in fire problems.

During the next year, a group of wooden roofed steel oil tanks on Monterey Bay was ignited by lightning. This fire spread to other oil properties and caused a loss of more than a million dollars. History repeated itself inasmuch as the company involved became very fire conscious and immediately organized a fire protection department.

There followed three other fires, involving some seven large steel tanks, all with wooden roofs, and again the ignition cause was lightning, probably through induction, since direct hits were not seen. It became more and more evident that wood-roofed storage of low-flash crude oils, either in steel tanks or earthen and concrete lined reservoirs presented a fire hazard from lightning that differed radically from the lightning hazard to other types of structures. Meanwhile, two other companies became converted to the fire protection idea.

It was natural enough that the engineers who had been assigned by these several companies to the newly organized fire service should get together. One of the first activities was to study

San Luis Obispo, April, 1926. Lightning and subsequent "boil-overs" ignited six reservoirs and fifteen steel tanks.

Address before the Forty-third Annual Meeting of the National Fire Protection Association, 1939.

forms of lightning protection and it is a fact that in 1925 plans were well under way for the installation of lightning towers and Faraday grids for oil reservoir protection under the direction of Messrs. Frank Peeke and E. R. Shaffer. The interest in this form of protection was accelerated by two great lightning fires in the fall of that year each involving a crude oil reservoir.

Then on the morning of April 8, 1926 two 750,000 barrel reservoirs blew off their roofs simultaneously at San Luis Obispo, California and an hour later another of the six reservoirs followed suit. In the ensuing fire all six reservoirs were destroyed along with fifteen steel, wood-roofed tanks in the same farm. California, which is practically lightning free, had produced the greatest oil fire of all times.

I wish that the story might end here, but unfortunately this was not bad enough, for on the morning after the ignition at San Luis Obispo, the same freak or unusual storm reached Brea, California, two hundred fifty miles to the south and there repeated on another tank farm of the same company. Here three reservoirs and a small refinery were destroyed. There was one other reservoir-lightning fire three weeks later, since which time the record has been perfect on all protected risks.

It is needless to say that the five oil companies involved in the fires that have been mentioned have never lost their interest in fire protection. Lightning protection has become standard practice. It is however curious to note that the other companies on the Coast have not followed their example in setting up fire engineering departments. It is the group which went through the great fires of 1923 to '26 that are today carrying the fire protection program.

In the fall of 1926 a curious and disheartening fire occurred in Southern California. A large tank at one of the major refineries blew its steel roof and burned without any apparent cause. That in itself was bad enough but in attempting to extinguish it, vastly greater quantities of foam chemicals were used than had ever been considered necessary. In fact, practically the resources of the refinery were exhausted in fighting this one fire.

There followed a period of painstaking and costly investigation that brought forth one of the greatest improvements in foam technique. It was discovered that the manner of applying foam to a burning oil surface determined the efficiency of its use. Gentle application permitted extinguishment, while vastly greater quantities had little effect when poured into a half empty tank. After spending about a hundred thousand dollars in research, Standard Oil Company gave to the industry its portable overshot pipe design, with its asbestos conductor tube and suspended basket. It was only a short step in logical development from Standard's design to the Moeller porus asbestos tube which can be floated over the burning surface of an oil tank to distribute foam gently to the burning oil surface. Both of these devices embodied a radical change in the manner of fire fighting, making use

A modern river terminal. Tanks are of all-welded construction spaced approximately one-half tank diameter apart. All piping is above ground. Diking is based on 100% of largest tank plus 10% of aggregate capacity of all others.

of the portable applicator, which is erected after the fire starts and after the roof of the tank has blown off or opened. This device is now standard equipment in the West among the major companies.

It was at the Standard oil fire of 1926, just referred to, that the fire protection engineers of the five companies got their nickname. When one of the refinery officials looked about the circle of firelit faces he remarked, "You fellows are like a bunch of buzzards; whenever there is a smoke in the sky you appear from nowhere to pick over the remains." And "Buzzards" they have been ever since, five men representing five companies that have learned by costly experience that fire protection engineering pays dividends.

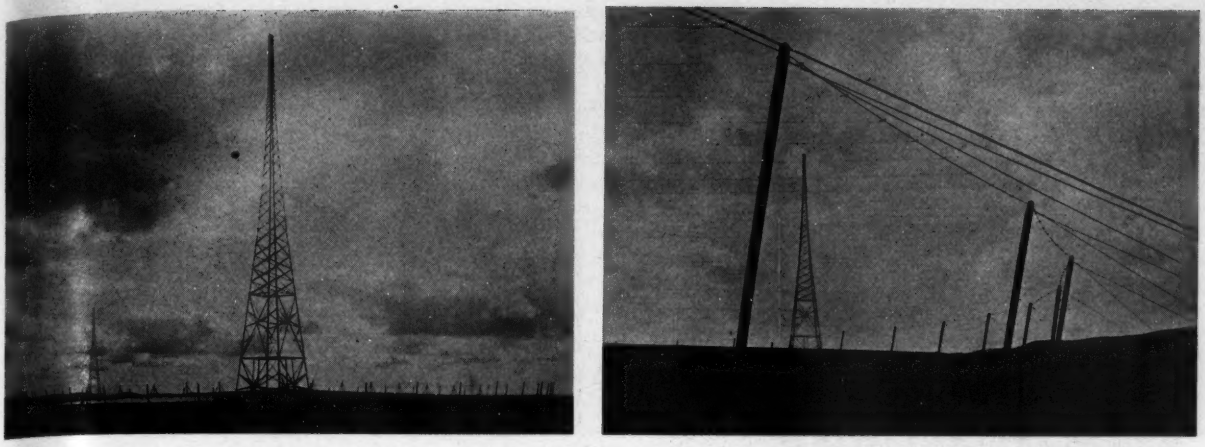
It was not only the oil companies, however, that learned some fire lessons in California in 1923-6. The insurance fraternity shared both in the cost and the lessons of those years. The background of good experience under one set of conditions had been taken as applying, even when the conditions had changed radically. More than one underwriting company discovered that sound underwriting involves more than statistical history. Better engineering on the part of both operators and underwriters as well as closer co-operation is as badly needed for the changing conditions of today as it was fifteen years ago, but apparently it takes at least a million-dollar-fire to convince people of this fact.

It is pleasant to be able to say that so far as the last ten years are concerned, the Pacific Coast and particularly the major companies, have profited by the experiences of the past and that the whole subject of fire protection has been given reasonable backing by most companies. Lightning protection, elimination of wood roofs and better housekeeping has helped. Losses have been small and as a result there has been time to consider the problems of community protection.

These are the problems that arise from the production, storage and use of great quantities of oil in thickly settled urban areas. It is one of the curiosities of nature that for many years oil production in California was confined largely to desert regions, where ownership of land was in large tracts and where there was little conflict between the operators and the public. That changed with the discovery of oil at Signal Hill, followed by town-lot drilling in Huntington Beach, Santa Fe Springs, Venice and finally the Wilmington-Long Beach field. Today this latter pool is producing more oil per day than any other in California, with its derricks and tanks surrounded by business and residential buildings and thus far with not a single serious fire.

The reason for this latter unique record is found in the work that has been done in co-operation between the city and county fire authorities and the fire protection engineers of the oil companies, working as a committee of the California Oil and Gas Association. Fully half the time of these men has been given to this community work and the results speak for themselves. Not a single major city on the Coast, from San Diego to Vancouver, has failed to avail itself of the Buzzards' services. Literally scores of ordinances, regulating every phase of the oil business from drilling to ultimate use by the consumer, have been prepared with the help of this group.

In all of the ordinance work done by the Buzzards, the model flammable liquids ordinance of the National Fire Protection Association has been the basis, insofar as it applied. Adaption has of course been necessary. The model ordinance does not include chapters on drilling and production. Even for the



Lightning protection for wood-roofed tanks and reservoirs has been effective.

regulation of wholesale and retail oil marketing facilities, the model ordinance must be cut and rewritten, expanded and amplified, to meet local conditions and the established practices of the industry. Yet nothing better exists in print as a basic code and the ordinances that have been written on the Coast reflect a high opinion of the Association's pioneer work.

It has been felt, however, for a long time, both by fire authorities and the oil men that it would be advantageous to reissue the model ordinance in a form that would make it more readily usable by municipalities. To that end the flammable liquids committee, last November appointed a conference committee comprising the Pacific Coast members of the fire committee of the American Petroleum Institute to suggest a complete revision of the suggested ordinance on flammable liquids. Work on that assignment has been going forward quite steadily ever since and already two chapters of the suggested redraft have been written and are ready for the flammable liquids committee. Other chapters are in the making and before the end of the year should be completed and ready for submission.

It is not my purpose to discuss those revisions specifically. I should, however, like to mention some of the lessons in fire prevention and control which have established the point of view of our group, and which are necessarily reflected in our work on the ordinance.

First of these lessons is that in refined products such as are found in wholesale or retail plants few oil fires spread beyond the confines of the plant. Based on the record, every wooden structure and especially one with a shingle roof, is of greater public concern than is the typical marketing oil plant. Consequently the public interest in such oil fires is well served when those simple regulations are enforced which eliminate or penalize substandard construction.

Another basic lesson is that extinguishment of oil fires at marketing stations by any other means than control of the fuel supply is seldom economically justified. Only at refineries and other points of necessary congestion and high ignition hazard has it paid the industry or the public to install chemical foam plants. That picture is changing so rapidly now that one hesitates to make any categorical statements. It is probable that the development of the portable foam generator and the portable gentle flow applicator, using the Moeller porous tube, will make it possible for municipal fire departments to protect oil marketing facilities in the future at a cost that is commensurate with the risk.

Perhaps the most important lesson is the importance of adequate venting of above ground storage tanks. Experience has taught us that well built steel storage tanks are immune to ignition from outside sources, and safe against bursting pressures when properly vented. The use of so-called flame arresters at the vents has proved both unnecessary and often dangerous. The typical palate type breather valve which probably has 85% efficiency as a flame arrester under laboratory conditions has actually proved to be 100% efficient in use, and with none of the attending dangers of the laboratory approved type. The difficulties of maintenance and the danger of freezing in winter has completely condemned this latter type valve for tank use. Even were it comparable in cost, it could not take the place of the palate valve and even if it were free, we would not use it. Good venting equipment is neither complicated in design nor unduly expensive. Adequate venting is a problem in mathematics.

Adequate venting, as defined in the current N.F.P.A. model ordinance means "some form of relief for preventing the development of excessive internal pressure in case of exposure fire surrounding the tank." Every oil plant fire that we have seen or analyzed bears out the value and the importance of that criterion. But the oil industry and the insurance industry have in the past both failed to give sufficient weight to the evidence on this subject. Public authorities on the whole have ignored it.

Another lesson involves fire sources. The greatest single ignition hazard in an oil plant is that point where flammable vapors or liquids are exposed to the air, that is, outside of tanks and pipes. In a wholesale plant that point is obviously the loading rack and barrel filling place. Three of the last four fires we have analyzed started at the rack. Since every automobile tank truck carries potential ignition hazards, and since the loading of a tank truck involves vapor release, it should be clear that adequate control of piping from a point remote from a loading rack fire is of prime importance. So also is spacing of that rack from other structures and especially from known sources of ignition which cannot be controlled. So also is drainage. No less so is the discipline and training of personnel. Fire extinguishment for such a risk is of minor importance. Once the fuel is cut off, water serves as well as any other extinguishing agency.

Too much reliance has been placed on elimination of electrical hazards. There are hundred of wholesale marketing stations on the Pacific Coast, where all pumping of gasoline and other products is done by gasoline-engine driven pumps, housed in one room detached pump houses. The fire experience in such installations has been practically nil. Modern practice is to substitute direct-connected squirrel cage induction motors for these engine driven units. This permits remote control from the loading rack, with greater operating efficiency. In

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Makers of high-quality wire lines for California oil fields . . . including Plow Steel Sand Lines, Plow Steel and Monarch Whyte Strand Casing Lines.

Portable foam generators used at tank fire test. Because of their low initial cost and their portability, generators have practically replaced the old two-solution foam systems in new installations on the Pacific Coast.

Full-sized test of modern foam application, using a 37,000-barrel tank partly destroyed in a previous fire. Note portable foam tower with asbestos applicator tube rolled up at end of gooseneck.

Fires in substandard gasoline storage accounts for most of the restrictive legislation—this fire destroyed three such plants.

some jurisdictions the local electrical inspectors relying on the National Electrical Code have tried to enforce the use of explosion resistive electrical equipment, sometimes alongside of the existing gasoline engine, over which they have no jurisdiction. In other communities we have been asked to junk our gasoline engines and to substitute explosion resistive electrical motors, switches and wiring. In view of the record, such demands are not sound fire protection and certainly not economical. Still, they are understandable when one reads the National Electrical Code, which does not clearly define hazardous locations nor recognizes the mathematical improbability of simultaneous failure of both pump and motor. In California a committee largely composed of electrical men and insurance representatives saw fit to clarify this point when writing the State Electrical Safety Orders of the Industrial Accident Commission. As a result, squirrel cage three phase motors are permitted in the typical marketing station pump house, while all sparking equipment, such as starters, are ruled out. The record bears out the wisdom of this clarification of the Code.

Perhaps the most difficult question that comes up before the ordinance writer is that of protecting the adjoining property owner against the possibility of oil escaping over the surface of the ground from a broken pipeline or tank. The basic principle is found well stated in the present N.F.P.A. model ordinance, but refers there only to tanks of less than fifty thousand gallons capacity. It says "tanks . . . shall, when deemed necessary by the Chief of the Fire Department, on account of proximity to streams, character of topography or nearness to buildings of high value, be diked or the entire yard provided with a curb or retaining wall, or other suitable means taken to prevent the discharge of liquids onto other property in case of a rupture in tank or piping." There is no reference to capacity for such dikes or basins as may be required under this paragraph, although for tanks of more than fifty thousand gallons, the required dike capacity is one hundred per cent of any or all tanks enclosed.

Relatively few wholesale marketing station tanks are diked, taking a car window view of the situation across the continent. Our own company in the past ten years has on its own motion diked scores of such tank groups, using the criteria stated in the quoted paragraph. Where it has been left to our discretion, we have made these dikes hold one hundred per cent of the contents of the largest tank enclosed, plus ten per cent of the aggregate capacity of all others within the dike. Many of the ordinances we have written embody this formula. We know of no instance, either within our company or without, where modern steel tanks, equipped with modern pipe connections, have failed and warranted even this amount of capacity. It is our belief that one hundred per cent dike capacity for a group of tanks can only be suggested on the premise that two or more tanks will fail at the same time or that the piping from two or more tanks will fail and empty all tanks simultaneously. The mathematical chance of such a coincidence is too remote to warrant legislation carrying such an economic penalty. If diking were made an alternative to all the items that make up good standard tanks and pipe design, plants would be better built. But in any case, dike capacity should be based on reason.

In the early days, when most station tanks were horizontal and stood on unprotected steel legs and when venting standards made no attempt to provide relief under conditions of surrounding fire, the matter of tank spacing came in for a lot of discussion. Later, when insurance rating schedules were first being made and wood roofed tanks containing crude oil were considered, the question took on even greater significance. We would not minimize the importance of this matter, but insist that where tanks are of standard gas tight design and are adequately vented through palate type safety—or breather —valves, spacing is not nearly as important as in substandard construction. Scores of fires involving adjoining structures have proved the fire immunity of the modern gasoline tank. Even ruptured piping and surrounding pools of burning oil have failed to impugn this reputation. We therefore hope in the revision of the model ordinance that tank spacing will be predicated on tank design rather than tank size, as it has been heretofore.

The major oil companies of the country have a selfish interest in fire protection. The industry is highly competitive and outrageously taxed. The bonanza days are over. Losses must be avoided and public confidence must constantly be cultivated. Nothing is more wasteful of money or of confidence than is fire. We who advise the larger operators realize this acutely. But only a relatively small part of the industry in its overall aspect is in the hands of large operators. In California, for example, there are a hundred independent oil producers for every major company. The same condition, to a lesser extent, applies to the marketing of refined petroleum products. Any fly-by-nighter can go into the oil business and lots of them do. The major oil companies reporting their losses to the American Petroleum Institute showed a fire loss in 1937 of 7c per hundred dollars of value in structures and only 3.6c per hundred dollars loss by fire of oil in storage. The industry believes that the same type of engineering that has brought about that record should be made available to all operators, and to the public authorities. To that end the industry has published manuals of good practices and is now aiding in many states in framing sound fire protection legislation. To that end the rating authorities should give close scrutiny to the fire reports of oil losses, for in them is the only basis for a sound rating schedule. And to that end also, the model ordinances of this Association should be based not on theory but on the fire record. In an industry that produces, refines, transports and dispenses more than a billion barrels of flammable products a year, there is no need to hypothesize on what is safe practice and what is not. The record is extensive and the progress already made by our industry warrants your confidence.

Barkis and Wright Organize Specialties Firm

B and W, Inc., has been formed by Bruce Barkis and Kenneth Wright to manufacture and distribute oil field specialties, featuring mud removal and sand control. Mr. Barkis and Mr. Wright were associated as petroleum engineers for the Doheny interests in the early development of Signal Hill and other Los Angeles Basin Oil Fields. Mr. Barkis has more recently been connected with the Rio Grande Oil Co. and Lane-Wells Co. Mr. Wright has had extensive field and consulting engineer experience in California and foreign fields. The new concern has purchased the former plant of the Petroleum Securities Co. at 3545 Cedar Avenue, Long Beach.

BJ Appoints Remmel California Sales Manager

The many friends of S. F. Remmel will be glad to learn of his recovery from a protracted illness.

Coincident with his return to duty on a full-time basis, Byron Jackson Co. announces the appointment of Mr. Remmel as California sales manager of the Oil Tool Division distributing BJ Oil Tools.

In order to satisfy the demand for motor fuels and lubricants for modern machines, synthetic methods had to be developed in order to improve their qualities.

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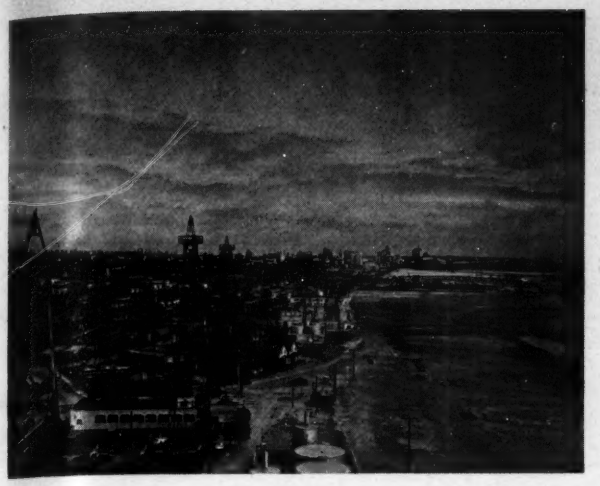

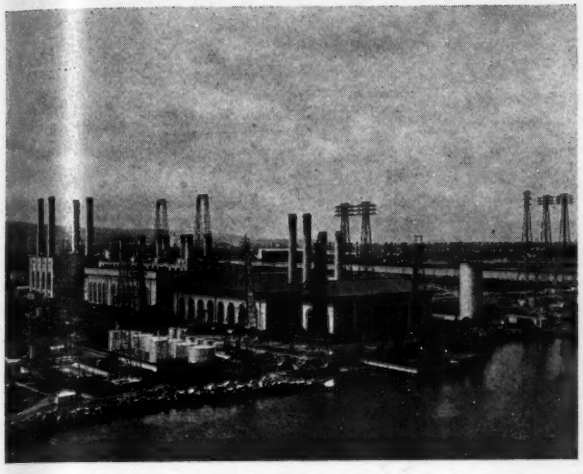

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On left page is Harbor development map. Above, views of Harbor area activity. Circled numerals denote depth. See story on page 20.

C. N. G. A. Meets Sept. 15

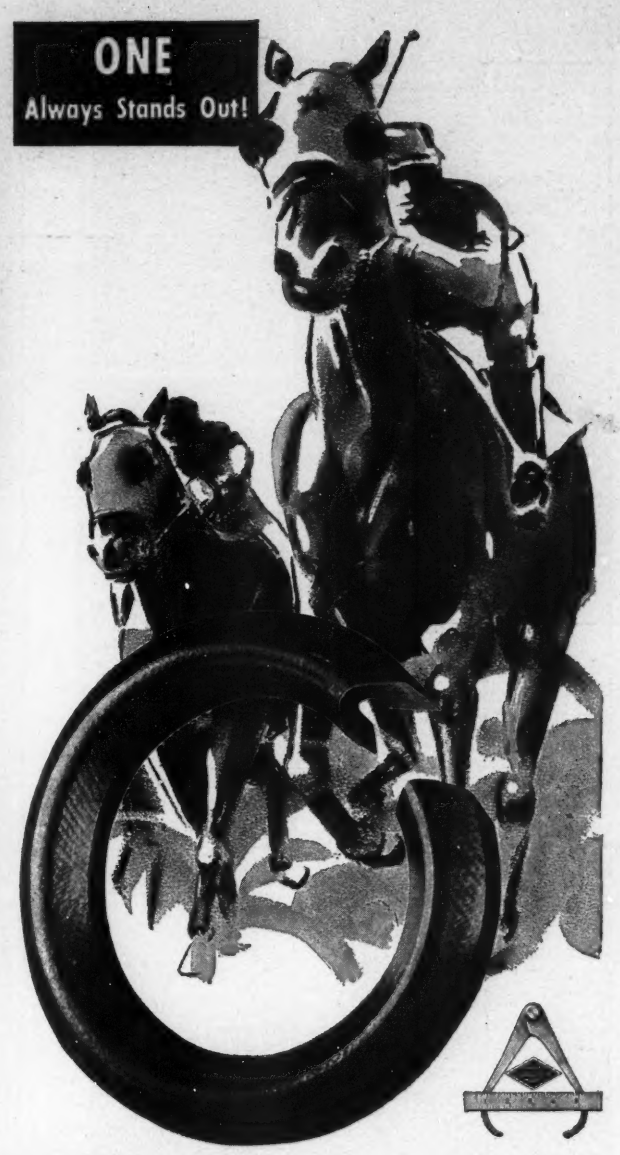
September C. N. G. A. meeting will be held Friday, September 15, at Barker Bros. Building, Los Angeles.

All C. N. G. A. meetings are open to interested parties, so bring a guest!

The Program

Paper: "Resumé of the Bureau of Mines Study of Gas Hydrates." By: W. M. Deaton, U. S. Bureau of Mines, Amarillo, Texas. A few years ago the "freezing up" of gas lines and plant condensing systems at temperatures above 32°F., e.g., at temperature of 60°-80°F., was a frequently occurring difficulty that seemingly couldn't happen. The discovery that these plugging difficulties were due to the formation of snow-like crystaline compounds of water and natural gas which could exist only under high pressure conditions, and subsequent development of means for preventing such difficulties have constituted one of the most valuable and interesting natural gas research projects in recent years. Mr. W. M. Deaton has been in charge of the Bureau of Mines investigation of this problem in co-operation with the American Gas Association. He is advancing the problem in a highly encouraging manner and has been in close contact with all Mid-Continent developments.

Paper: "Lowering of the Decomposition Temperature of Natural Gas Hydrates." By: J. S. Powell Southern California Gas Co. Mr. J. S. Powell is to make the Pacific Coast contribution to our meeting. He will have hydrate apparatus on the stage so we can actually see how hydrates form and disappear. A discussion group consisting of B. M. Laulhere, C. F. Briscoe, G. E. Fullmer and A. C. Lyles will assist in bringing out various angles to the problem.



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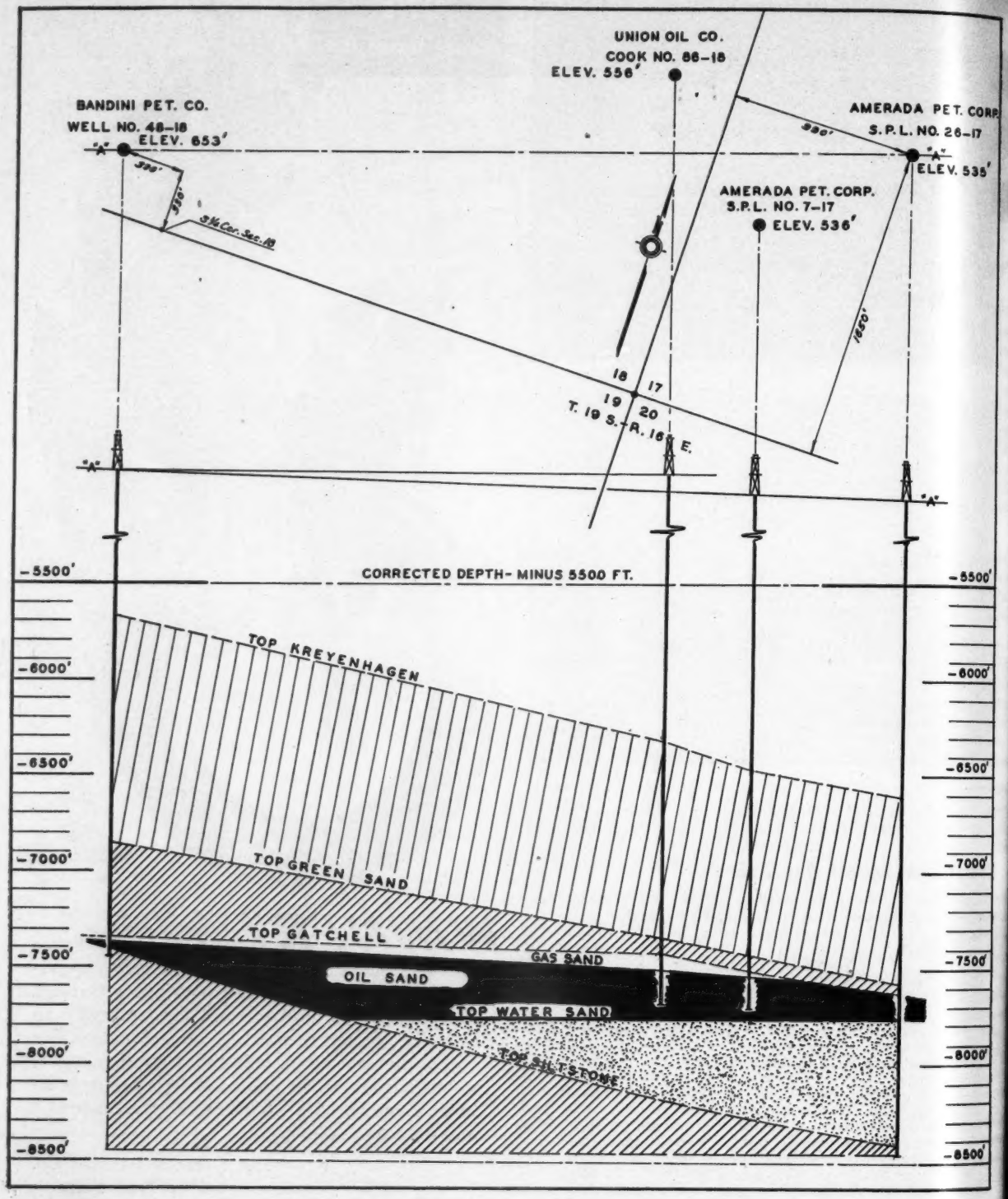

COALINGA NORTHEAST FIELD SECTION

This section is purely diagrammatic showing only important markers and does not pretend to show the true conformity of the structure. Issued as a supplement to CALIFORNIA OIL WORLD NEWS SERVICE for August 26, 1939. Marker data as recorded in C. O. W. N. S.

SE THIS SECURALOY CABBING* ASSEMBLY OR *Safe* REPAIRS!

CASIONALLY operators are confronted with the problem of ring a damaged section of casing to exclude water... or it und necessary to seal off certain undesired perforated liner reen sections... or one or more leaky casing joints must be ired. For this type of work, the SECURALOY "Scabbing" mbly (placing pipe sleeve within an existing liner or casing) equalled. It is easy and positive to set, requiring only one into the well... it forms a tight permanent seal top and bot-...it may be cemented in place, if desired... and, being e of SECURALOY, *it can be completely drilled up and cir-ed out of the well whenever necessary.*

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e Security Drillable "Scabbing" Assembly is essentially a n of SECURALOY Pipe (the length depending upon the nce to be sheathed) with a *drillable* packer at its upper and r ends.

lower packer is similar to a Security Drillable Slip Type er with packing elements, except it is threaded at the top nd of the bottom to accommodate the pipe sleeve section. ough the "Scabbing" sleeve ordinarily is blank pipe, it may e-perforated to any desired mesh should it be desirable to a secondary screen placed inside of damaged slotted pipe reen.

curity Packing Type Hanger with reversed slips is attached e top of the "Scabbing" Assembly and, when located in its r position, the packing is expanded with a Security De-l Action Packer.

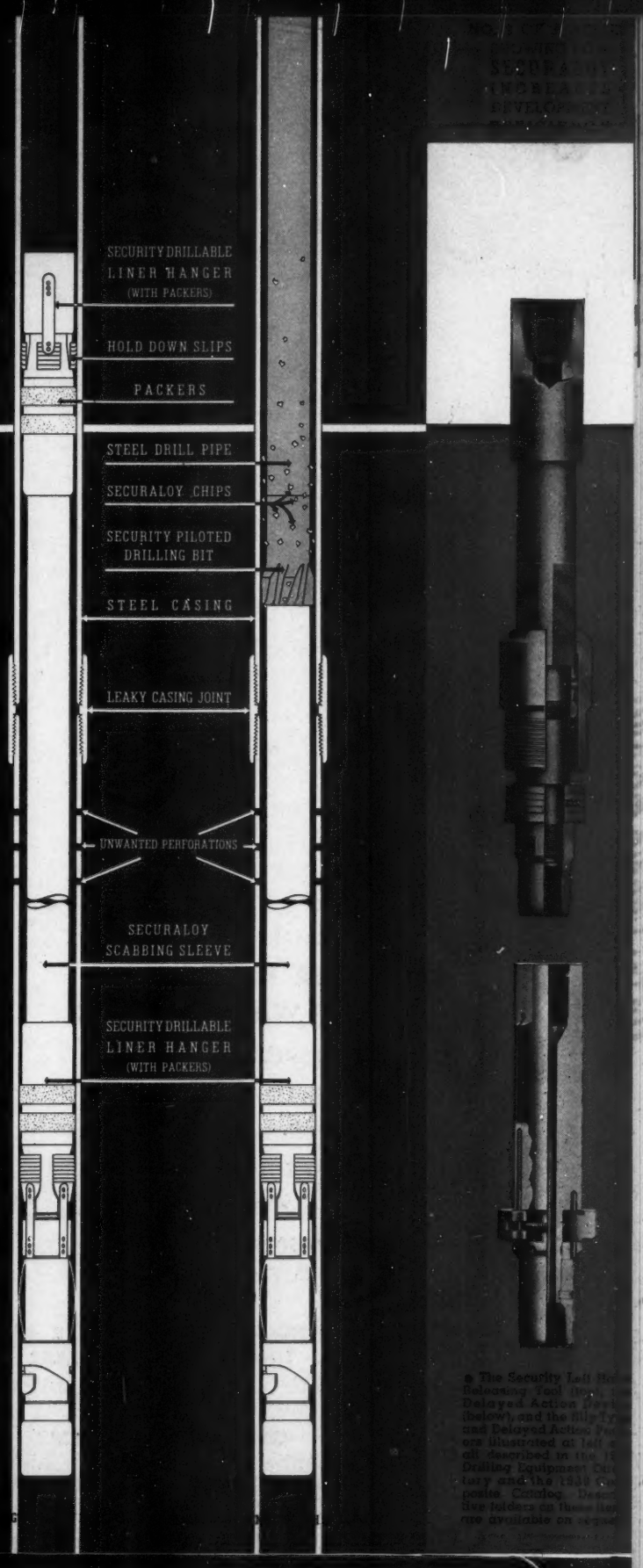
ONLY ONE TRIP REQUIRED

y one trip into the hole is required to lock the sleeve firmly ce and expand both the top and bottom packers. The unit is ed into the well on a Security Left Hand Releasing Tool pped with Delayed Action Device) and when the desired is reached, the slips on the bottom packer are set and the ng seal expanded in the conventional manner. Then the run-ng is backed off and lifted a short distance, thus placing layed Action Setting Device in operating position so that, weight is again lowered, the upper packing seal is packed he operation is as simple as that—and note that each r is expanded separately under individual control!

hould be desired to cement the sleeve in place, this can be plished readily by using suitable cementing equipment. *ementing operation does not necessitate an additional trip e well!*

etails on the uses of this "Scabbing" Assembly will be sup-by our Engineering Department upon request.

BBING" is the operation of sealing over a defective or un-d perforated section of casing.



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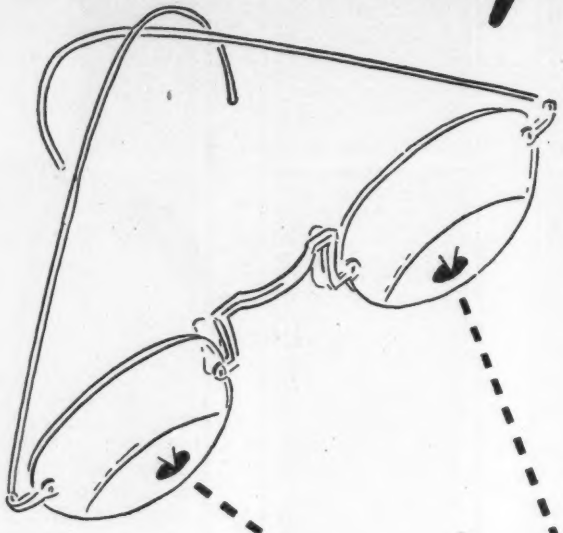

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LAUGH THIS OFF

Down on an unsuspecting oil man a few days ago there swooped a whole tribe of country relatives. Somewhat cramped for space, the victim rented a room from a neighbor and installed his uncle and several cousins. A short time later the uncle protested vigorously that one of the cousins was keeping a goat in the room and the aroma was more than he could stand. "Aw, shucks," said the host, wearily, "Open the window and make the best of it." "Yeah," snorted the uncle, "That's a swell idea—open the window, and lose all my pigeons."

Which recalls **Dick Sherman's** story of the new rousty who moved into the bunkhouse and immediately began to equip his quarters. He was busy driving a long spike into the wall for a clothes hanger, when the bird from the second room down appeared at the door and inquired, "Do you mind if I hang a picture on the other end of your spike?"

And according to **Bob Bush** when the speaker at a recent gathering was introduced as the "Father of Petroleum Engineers", a pumper in the back of the hall piped, "Hi, dad."

Then there was **Bud Smith's** yarn about the newly married equipment salesman who found himself in a dry goods store, but couldn't remember whether he was to get a casserole or a camisole until the clerk asked him what kind of a chicken he was going to put in it.

Whereupon **Bob Richey** rises to recite a weird tale about a scout who was sent to a wildcat location to get some information from a wildcat of a promoter. When, on his return, he was asked what he had developed, he merely pointed to his left eye which was tinted a deep indigo. "We can't report that," said the boss, "What did the fellow tell you?" Says the scout, sadly, "You can't report that either."

"An entomologist," explained **Mac McCutcheon,** as he introduced **Joe Neuls** (who is one) is a person who studies insects. "Gee, that's interesting," says the third party, "I must have him meet my brother-in-law."

Harry Severns next tells us about a rousty who took his second hand car back to the dealer and pleaded, "Tell me again what you said about this car three weeks ago, I'm getting a bit discouraged."

It has also been suggested by some meanie that everything in the oil business is taxed but brains.

In which connection, it is interesting to note that about 80 per cent of the people do not pay income taxes. All these slackers do is to provide the incomes that the other 20 per cent pay taxes on.

At a recent sales meeting, if we are to believe **Bob Roberts,** the speaker after expounding for several hours wound up his dissertation with the conclusive remark, "And there you have the whole idea in a nutshell." "Gee," said an exhausted listener, "What a nut!"

And when another orator proclaimed that he was speaking straight from the shoulder, a member of the audience opined it was too bad that some of his talk didn't originate a little higher up.

Which recalls the weaving motorist who was stopped by the motor cop. "What's the matter?" asked the latter of the lone occupant. "Somebody's stole the steering wheel," was the reply. "You get outa that back seat, and sit up in front where you belong," says the cop, "Or I'll run you in."

With these few remarks we end another highly instructive session. Don't forget that the average oil man thinks he isn't.

And remember also that while opportunities lie on every side, opportunities are not the only things that lie.

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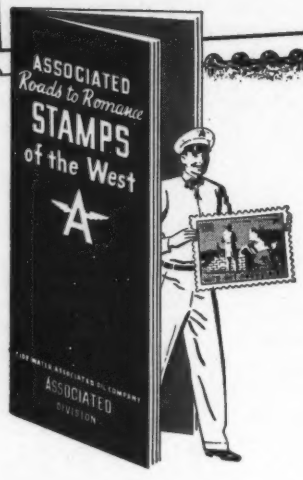

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Field Development

San Joaquin Valley

New Production At Coalinga N. E. Area

Completed under wraps with a favorable gas-oil ratio, Union Oil Co.'s Cook No. 86-18 flowed an initial 363 barrel rate through a 7/64 in. bean. Located near the east line of sec. 18,19-16, the well penetrated the gas cap found in the area, but by blanking off all but 59 ft. of formation at bottom, the well obtained a curtailed flow with but 266,000 cubic feet of gas. The well's adequate control of the gas situation is best evidenced by the fact that Bandini Petroleum Co.'s No. 48-18, one location to the west, flowed more than 30,000,000 feet of gas on a water shut off test and had materially less gas sand than was found in the Union hole. Production was last given as 254 bbls. daily of 27.8 gravity clean oil and 142,000 cubic feet of gas per day through a 9/64 in. bean.

The Bandini project near the south quarter corner of section 18, was last reported as fishing for a tail piece after recovering the drill pipe and formation tester. A test of the 7 in. water string prior to loss of the tester, yielded the gas heretofore mentioned along with a 750 bbl. daily rate of 51 gravity gas condensate. Completion plans of the project indicate that but 20 ft. of black oil sand will be taken in this well. An equally favorable gas-oil ratio is expected to result from blanking off all of the extremely high-powered gas sand found in this Eocene horizon.

Amerada Petroleum Corp.'s third well, S.P.L. No. 5-17, has topped the Kreyenhagen at 7015 ft. and is drilling below 7520 ft. Located on the discovery section 17, the project is the most northerly of all projects and its drilling history should provide more complete information concerning the character of the oil bearing formations.

Standard Oil Co.'s well No. 73-19B, located a half mile south of production, in sec. 19,19-16 has proved the continuation in a southerly direction of this shore line Eocene oil sand. With the green sand topped at 7838 ft. and the top of the Gatchell oil sand at 7955 ft., the drill has proved that the tremendous thickening of the Turritella siltstone found in the Bandini well begins west of the Standard location. Finding of the Gatchell at this level indicates that there is little north and south inclination of the producing horizon. Casing has been set at 7925 ft. before drilling into the oil sand.

Most southerly of the Coalinga Northeast tests, Wilshire Annex Oil Co.'s well No. 64-30B near the center of sec. 30, 19-16, is drilling below 7101 ft. in the hope of finding a still more southerly point on the shoreline deposit.

Western Gulf Finds New Stevens Field

Completion of the Western Gulf Oil Co.'s KCL-Panhandle No. 1 wildcat venture in the Buena Vista Lake Area, credits the company with discovery of what may prove to be an extremely prolific oil field. Based on a five-hour test, the well came in flowing 2246 barrels daily rate of 50.6 gravity oil through a 24/64 in. bean. 15,000,000 cubic feet of gas accompanied the flow which is reported to be clean. With the bottom of the hole at 10,178 ft. the yield is from approximately 165 ft. of oil sand described as the Stevens zone.

Drilled as a joint test with The Texas Co., the well lies near the center of sec. 3, 32-26, some two miles east of the south edge of the Buena Vista Lake Gas Field.

The Western Gulf-Texas Co. combination holds many hundreds of acres under lease on the play, with Ohio Oil Co., Superior Oil Co., C. C. M. O. Co., Barnsdall Oil Co., Union Oil Co., Signal Oil and Gas Co., The Petrol Co., and many others holding smaller acreage which may prove productive. Nearest offset acreage, the northwest quarter of the discovery section three, is held by the Ohio Oil Co., who will probably begin the drilling of a well at once.

Richfield Oil Corp. is drilling BVA No. 81-36, at the northwest tip of the Buena Vista Lake Gas Field, for a test of the lakebed on sec. 36, 31-25. Meanwhile the Shell Oil Co. also is rigging up for a test of the area. Located in sec. 9, 32-25, the Shell well is to be known as BVA No. 45-9, and is a test on the south edge of the lakebed.

At the edge of the Buena Vista Hills field and near the lake boundary, General Petroleum Corp. is drilling BVA No. 1 below 8561 ft. Located near the west quarter corner of sec. 1, 32-24, the project has found no showings to date.

S. Mountain View Activity Diminishes

With the recent completion of Richfield Oil Corp.'s Mott No. 1, for 2400 bbls. daily, and the abandonment of Standard's Tupman No. 1, at the Southern tip of Mountain View, this area has but two active wells.

Deeper of the survivors is The Texas Co.'s Jewett No. 2. Located in sec. 16, 31-29, one location west of Standard Oil Co.'s discovery well Jewett No. 1, the well was drilled to 7722 ft. topping the basement complex at 7705 ft. Bottom has been plugged to 6960 ft., where a liner is being run for a production test of the interval 6895-6960 ft. The well has had a series of formation tests from 6410 ft. to 7486 ft., all of which showed some oil. The main body of oil sand is apparently to be taken in the new production test.

Standard Oil Co. has spudded Jewett No. 2-5 one location to the east of discovery well Jewett No. 1. Last reports from the well place the bottom below 2110 ft.

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RICHFIELD *HI-OCTANE*

This area at present has 10 producing wells localized in the east half of section 16 and the west half of section 15, 31-29.

A mile and a half to the north, in the southerly portion of the old Mountain View field, Hogan Petroleum Co. is drilling Peters No. 4. Located near the east quarter corner of sec. 5, 31-29, the well is reported to be running a formation test with bottom in oil sand at 5588 ft.

Lytle Completes Eocene Pool Well

Drilled with characteristic expediency, Robert S. Lytle, Operator, has finished well No. 7-18F. Located at the south edge of the Eocene Pool in sec. 18, 20-16, the well was completed flowing 2386 barrels of 31 gravity oil through a 23/64 in. bean. Gas production was gauged at 1,766,000 cubic feet daily.

With nine strings running in the field, it presents an accurate picture of the ease of controlled drilling. Allotments are scrupulously observed and drilling is not done on a competitive basis. This field has had every break and should produce a great deal of oil over a long period of time.

A mile southwest of Eocene Pool pro-

SAN JOAQUIN VALLEY WILDCATS

Area	Well	No.	Section	Depth	Status
Fresno County					
Cantua Creek	Richfield Oil Corp., Turk	1	4, 17-15	8453	Testing
	Superior Oil Co., S.P.L.	1	15, 18-16	11442	Abandoned
Coalinga	Amerada Pet Corp., SPL	5-17	17, 19-16	7187	Drilling
	Bandini Pet. Co.	48-18	18, 19-16	8093	Fishing
	Parkford, E. A. & Assoc.	45-24C	24, 20-15	6771	Drilling
	Rylatt, Harry E., Kipling	3	26, 20-14	2010	Cleaning out
	Standard Oil Co.	73-19B	19, 19-16	7985	Drilling
	Stuart Oil Co.	1	12, 21-14	1410	Idle
	Union Oil Co., Cook	86-18	18, 19-16	8240	Producing
	Wilcox, John F.	7	11, 20-14	195	Idle
	Wilshire-Annex Oil Co.	64-30B	30, 19-16	6765	Drilling
Fresno Area	Seth Turner	1	4, 14-19		Rig
Gatos Creek	Gatos Creek Oil Co.	1	19, 19-13	300	Idle
Kern County					
Antelope Valley	Par Petroleum Co.	1	32, 25-17	785	Shale
Buena Vista	Gen. Pet. Corp., B.V.A.	1	1, 32-24	8561	Drilling
	Richfield Oil Corp., B.V.A.	81-36	36, 31-25		Rigging up
	Shell Oil Co., B.V.A.	45-9	9, 32-25		Rigging up
	Western Gulf Oil Co., K.C.L., Panhandle	1	3, 32-26	10175	Producing
Buttonwillow	Union Oil Co., Bowerbank	4-23	23, 29-24		Rig
Devil's Den	Herzog, Raymond D.	1	27, 25-18	710	C.O.—formerly W.L. Luxton
	Emigrant Hill Oil Co.	1	24, 25-18	4271	Idle
Edison	O'Rielly, Francis, Edison-Land	2	5, 30-29	3150	Drilling
	Petrex, Inc., Metro	2	6, 30-29	3650	Drilling
Grapevine	Richfield Oil Corp.	KCL 1	28, 11-20	11168	Drilling
	The Petrol Corp., Reserve-Petrol	33-5	33, 11-19	9190	Idle
Greeley	General Pet. Corp., Sullivan	1	12, 29-25	9558	Drilling
	Standard Oil Co., KCL	12-5	7, 29-26	8175	Drilling
Midway	Baker, Leyse & Sonne	1	20, 32-23	1094	Drilling
Mt. Poso	G. & V. Oils., Ltd.	1	35, 26-28	634	Fishing
Poso Creek	Hall-Baker Expl. Co.	1	17, 27-27	2364	Abandoned
Richfield Western	Richfield Oil Corp.	A-12-33	33, 30-25	9221	Drilling
	Standard Oil Co.	KCL 21-1	19, 30-25	9977	Prep. to pump
Richgrove	Crusaders Pet. Corp., Quinn	1	9, 25-27	1475	Idle
	Dilamar Oil Corp., Quinn	3	15, 25-27	2902	Cleaning out
San Emigdio	Bannow, Louis E., Irvin	1	15, 10-23	1900	Reaming
	Continental Oil Co.	KCL F-1	5, 10-21	8070	Drilling
	French, Mabel E.	1	14, 10-23	714	Fishing
	Shell Oil Co.	KCL 2A 52-13	13, 11-22	10327	Drilling
Strand	Continental Oil Co.	KCL D-2	14, 30-36	12795	Drilling
Upper Kern River	Kern Valley Drilling Co.	1	4, 29-29	1720	Idle
Wasco	Getty, George F., Janssen	1	7, 27-24	13131	Producing
Kings County					
Strattford	P. W. Burnham & Assoc., Bartells	1	23, 20-20		Rig
Tulare Lake	Graphic Oil Co., Taylor	1	34, 23-20	4044	Idle
Tulare County					
Terra Bella	Arnold, V. F., Yellow King	1	9, 23-28	620	Idle

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duction, near the center of sec. 24, 20-15, E. A. Parkford and Associates' Coalinga No. 45-24C was last reported in hard shale at 6759 ft.

Devils Den Test Resumes Drilling

Raymond D. Herzog and W. L. Luxton are resuming operations in their Marine No. 1. Located in the southeast quarter of sec. 27, 25-18, the well was suspended early in the year at 710 ft. after claiming 42 ft. of sand showing oil. Heavier equipment has been installed in a new rig, and the hole is being reamed preparatory to deepening.

Cantua Creek Hopes Fade

With the abandonment of Superior Oil Co.'s eleven thousand foot dry hole, SPL No. 1, and the apparent failure of a formation test on Richfield Oil Corp.'s Turk No. 1, hope for oil production in the Cantua Creek Area is stymied.

The Superior well, located in sec. 15, 18-16, was given up at 11,442 ft., with a fish in the hole. Reported as bottomed in barren Eocene shale, the project found no oil sand.

The last survivor of a long line of Cantua Creek wildcats, and newest test in a program of drilling instituted some ten years ago by the Western Gulf Oil Co. Richfield Oil Corp.'s Turk No. 1 may soon be abandoned. Bottomed in sand with slight oil showings at 8453 ft. after reporting the top of the Domengine sand at 8400 ft., a formation test recovered only mud. Apparently desiring to give the well every break, deepening is in progress at 8550 ft.

Tulare Lake Test Idle at 4044 Feet

Graphic Oil Corp.'s Taylor No. 1, wildcat test of the large undrilled area eight miles east of Kettleman Middle Dome, is standing idle at 4044 ft. The well, located near the center of sec. 34, 23-20, failed to encounter expected gas sands, but may be deepened in search of oil.

Getty Extends Wasco Field

Completion of Geo. F. Getty's Janssen No. 1, outpost well in the Wasco Area, extends production in the A-2 Sand zone a half mile to the west. Located just northwest of the center of sec. 7, 27-24, the well was completed from 40 ft. of formation open to 13,131 ft. flowing 1500 barrels of 38 gravity oil through a 21/64 in. bean. The oil was exceptionally clean and was accompanied by 800,000 cubic feet of gas. Little is known of the areal extent of the Wasco field since it's great depth precludes casual drilling. It is thought, however, that the area is comparatively small.

Strand Test Nears 13,000 Foot Mark

Continental Oil Co.'s deep wildcat in sec. 14, 30-26, four and a half miles east of the Canal Field, is drilling below 12,770 ft. Known as KCL No. D-2, the well encountered slight showings from 11,600 to 11,700 ft., after reporting all upper formations barren.

Poso Creek Test Finds Sand Barren

Hall-Baker Exploration Co. who moved in portable equipment to drill dePauli No. 1, in sec. 17, 27-27 of the Poso Creek Area, have abandoned the project. Drilled through the Etchegoin and bottomed in gray sand at 2364 ft., the well found only one foot of oil sand at 2076 ft.

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Richfield Retests Wheeler Ridge Well

Deepened from 11,004 ft., where all tests were wet, to 11,168 ft. in siltstone with streaks of oil sand, Richfield Oil Corp.'s KCL No. 1 is running a liner to attempt completion. On a formation test of the interval 11,095 to 11,144 ft., with the packer holding only two minutes, one half stand of oil was recovered along with 18½ stands of gassy mud showing a little oil. Located at the summit of Wheeler Ridge in sec. 28, 11-20, the project is being eagerly watched by all persons interested in the potentialities of deep zone production at the south end of the San Joaquin Valley. Richfield has recently acquired many thousands of acres of south valley land upon which an extensive exploration program is scheduled.

Tide Water Completes Second Strand Well

Tide Water Associated Oil Co. has completed Strand-KCL No. E-24-7. Located in sec. 7, 30-26, the well came in flowing 1755 barrels in 12 hours. The flow, through 2 1-in. beans, consisted of clean 35 gravity oil and 1,650,000 cubic feet of gas. This is the second well to be completed in the area Tide Water Associated discovered when it's E-35-7 was completed in the same section during July of this year.

A quarter of a mile to the west the Shell Oil Co. is preparing to test Ohio-KCL No. A-84-12. Located near the east line of sec. 12, 30-25, and the only other driller in the area, the well will set a water string and test the Stevens zone which was encountered at 8217 ft. Bottom of the hole is reported in gray sand at 8325 ft.

Shell Sets Long Protective String

Shell Oil Co. set one of the world's longest strings of 9⅝ in. casing in it's San Emigdio wildcat KCL No. 2A-52-13. Located in sec. 13, 11-22, just south of the Taft cut-off to the Ridge Route, the well is bottomed at 10,327 ft. with 10,297 ft. of casing in place. With no showings reported, and substantiated by the fact that no test was made following the running of pipe, the well is drilling in shale.

In the hills to the south, Continental Oil Co. is drilling KCL No. F-1 below 8,000 ft. The well, situated in sec. 5, 10-21, has reported no showings to date.

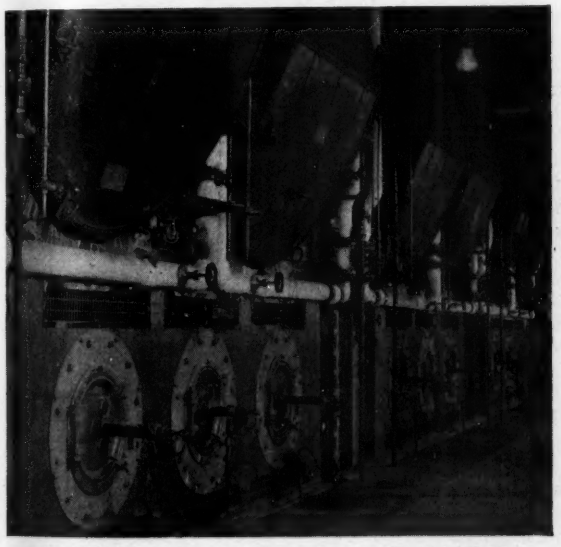
M. E. Tedford, left, formerly with Lucy, and Lewis J. C. Spruance, right, Rio Grande Oil, have taken over sales of Tri-Plane Champion Swing Joints and All Steel Rotary Hose.

Plans are underway for enlarging the distribution and representation of this new line to include territories outside the Pacific Coast areas.

Pemberton to Speak At Engineers' Meeting

J. R. (Bill) Pemberton, California Oil Umpire, will speak at the dinner meeting of the American Institute of Mining and Metallurgical Engineers on Ladies' Night, Tuesday, Sept. 19, at the University Club, Los Angeles.

Mr. Pemberton, noted ornithologist by avocation, will show and describe his colored movies of the California Condor.



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Los Angeles Basin

Signal Hill Test Drills Below 6230 Ft.

Dormax Oil Co's No. 1, Signal Hill's latest deep test, is drilling below 6230 ft. Located on 25th St. east of Walnut, the well is considered to have an excellent chance of bettering the production record of De Soto Oil Co.'s 10,157 ft. project completed last winter flowing 300 bbls. a day on gas lift.

El Hondo Petroleum Co. has encountered trouble in its projected 8000 ft. test at Spring and Long Beach Blvd. With the hole redrilled to 6700 ft., a twistoff necessitated another fishing job.

Whipstock Wells Spud In Harbor Oil Field

First two of many well to be whipstocked beneath the ocean bottom offshore from the Wilmington oil field were spudded in recently by Long Beach Oil Development Co. Both are located on the "Y" parcel and will produce from the Terminal zones. Fee owner of the submerged oil land is the City of Long Beach. See map on page 8.

On another submarine city lease, Signal Oil & Gas Co. completed S.P. No. 5, drilled from General Petroleum Corp.'s Southern Pacific property and finished beneath the inner harbor turning basin. The flow from both Terminal zones was 395 bbls. a day of 25.6 gravity clean oil. South of Anaheim Blvd. and west of Santa Fe, Dumm Bros. Petroleum Corp. finished its No. 2 at 3430 ft. with a flow estimated at 175 bbls. a day. Across Anaheim to the north, Los Angeles Basin Drilling Co completed Kupfer No. 4 flowing to the sump from a total depth of 3586 ft. In the same block, Roy Morgan is drilling a well with a short wood rig.

Royalty Service Corp. is continuing with its redrilling and deepening program in the Wilmington area, having three projects under way at present. The company has had some success in deepening old wells to the Ford zone.

On Terminal Island, Brookline Oil Co.'s Harbor No. 1 has settled to a 300 bbl. yield from the Ranger and Upper Terminal zones combined. The company's second well, No. 5, is nearing completion. The first two "W" wells of Long Beach Oil Development Co. were brought in as large producers from both Terminal zones. The company has started five more.

Gremac Oil Corp. completed its No. 2, most westerly well on the north bank of Cerritos Channel. With bottom plugged from 3800 ft. to 3710 ft., the initial flow was estimated in excess of 700 bbls. a day.

Emmett Jones' Interstate Investment Co., idle for many months, took over the General Petroleum Corp. Channel No. 3 Community leases lying north of Seventh St. and is completing its first well, the former No. 2. The entire lease is proved for Ranger production.

Total field production averages 86,000 bbls. a day, approximately 6,000 bbls. over the umpire's allotment.

West Montebello Field Is California's Busiest

With 50 wells actually drilling or completing and 15 preparing to drill, West Montebello is the most active field in the State. Beside those wells on which work has actually been started, locations have been registered with the city of Montebello for at least another dozen; an indication that no let up can be expected for some time yet.

Completions have been fewer during the past few days as most of the deepening jobs have been finished, but the next two weeks will witness a new flood, as the grass root wells which were started after the Eighth zone proved itself are beginning to come in. Despite the many wells now in the deep zone, the initial production rates of new wells remain very good, averaging between 700 and 800 bbls.

The use of adjustable gas valves in tubing is enabling operators to obtain the maximum oil yield with the most favorable gas production. A typical installation is that in Kern Co.'s Mulholland No. 5 which, with 7 in. casing cemented at 7538 ft. and with a perforated liner landed on bottom at 7641 ft., was gun perforated in the gas zone at 7410 ft.

Tubing, with 23 ft. perforated on bottom, was hung at 7582 ft. and a packer set at 7426 ft. which separates the gas from the oil horizon. The tubing contained an adjustable valve at 7400 ft. opposite the perforations in the 7 in. water string. The arrangement allows the oil to enter the tubing through the lower perforated joint while the high pressure gas enters in any amount desired through the valve at 7400 ft., gas lifting the oil to the surface. The ad-

LOS ANGELES BASIN WILDCATS

Area	Well	No.	Section	Depth	Status
Castaic	Lang, Ed. W., Rupy	1	7, 5-16	510	Idle
Dominguez	California Western Oil Co.	1	32, 3-13		Rig
Gardena	Citizens Oil Co., Dunn	1	30, 3-13		Grade
Inglewood	Vanguard Oil Co., L.A.I.	1	29, 2-14		Rig
Mint Canyon	Redwood Oil Co., Mitchell	2	22, 4-15	130	Idle
Montebello, West	Ridge Oil Co., Sea Cliff	1	3, 2-12	8039	Idle
Newhall	Mangrum and Page, Lintz	1	4, 3-15	352	Idle
Palos Verdes	Rolling Hills Pet.	1	27, 4-14	6100	Drilling
Playa del Rey	The Texas Co., Inglewood Est. Co.	1	34, 2-15	6672	Abandoned
	Vulcan Oil Co., Del Rey	1	22, 2-15	6057	Drilling
Potrero Heights	Owen O Oil Co.	1	36, 1-12		Cellar
Puente	Stabeck & Assoc.	1	14, 2-10		Rig
San Pedro	Sepulveda Oil Co.	1	23, 5-14	1100	Idle
Sunland	Casa Grande Oil Co., Lopez-Lundy	1	1, 2-15	1500	Drilling
Towsley Canyon	J. E. O'Donnell	1	8, 3-16	5225	Pumping water
Whittier	C. W. Partridge, Hillside	1	22, 2-11	1780	Idle
	Taylor Drlg. & Prod. Co., Gregg	1	17, 2-11	6058	Idle
	Orange County				
Olive	Morton & Elder	1	17, 4-9	620	Drilling
	San Bernardino				
Carbon Canyon	Carbon Canyon Oil Co.	1	30, 2-8	256	Idle
	John Hokom Oil & Gas Co., Ltd.	1	31, 2-8	2941	Abandoned

NORTHERN COUNTIES WILDCATS

County	Well	No.	Section	Depth	Status
Colusa	Empire Oil & Gas Corp., Dunlap	1	36, 16-5	70	Drilling
Humboldt	The Texas Co., Eureka	3	21, 3-1	4776	Drilling
Monterey	Priest Valley Pet. Co.	1	20, 20-12		Rigging up portable
San Benito	Silver Creek Oil Co.	1	11, 17-11	160	Idle
San Joaquin	Utilities Pet. Co.	1	7, 1-6		Rigging up
Sutter	Buttes Oilfields, Inc.	6	1, 15-1		Rigging up
Yolo	Standard Oil Co., Corcoran	1	29, 9-1	2300	Drilling

justable feature of the valve enables the operator to make his gas-oil ratio to order.

The rapidity with which new wells are being started is being viewed with alarm in more conservative quarters. Particularly bad is the area near the intersection of Beverly and Montebello Blvds. which is coming to resemble the "Hells Half Acre" of the old Long Beach field. According to engineers, the relatively thin sands found at Montebello will not be as long lived as the tremendously thick zones of Signal Hill, and care should be taken to prevent over-drilling.

With the greatest undeveloped area in the south and west sections of the field, eyes of the industry are focused on the important Texas Co. Wilcox No. 1 located on Wilcox Ave. north of Beverly Blvd. The location appears to be on the axis of the westerly plunge of the structure. On the south, attention is held by Star Petroleum Co.'s Comm. No. 1 at the intersection of Harding and Maple. The project is down about 6000 ft.

Demonstrating that the State Division of Oil & Gas has real teeth when it comes to gas wastage, Judge Emmett Wilson levied fines totalling $20,775 on seven companies which failed to obey a court edict obtained by the Division. Five other operators which were found guilty of unintentional violations were warned against further infractions. Gas allowables are arrived at by carrying the potential figure of each well, not to exceed 5,000,000 cu. ft., minus 120,000 cu. ft. to the .785 power, then adding 120,000 cu ft.

Wildcatting Slow In Basin Area

Wildcatting is at an exceptionally low ebb throughout the Los Angeles Basin area at the present time.

Perhaps the most interesting project now drilling is Vulcan Oil Co.'s Del Rey No. 1, located between the Venice field and Culver City. At last reports the well was below 6100 ft. and coring for the Nodular shale marker above the Conglomerate in which it is hoped to find production.

Another well which is near the make-or-break stage is Rolling Hills Petroleum Co.'s Weston No. 1 at the north end of the Palos Verdes hills. Reported in Nodular shale at 6100 ft., the bottom is presumed to be very close to the top of the basement schist.

F. W. Kelso's test well east of the town of Puente flowed water on a production test and is being deepened below 2250 ft. Formation is brown Miocene shale.

Although apparently in no hurry, California Western Oil Co. has derrick up for its westerly extension try at Dominguez. No move has been made to install drilling equipment.

Casa Grande Oil Co. works intermittently on its wildcat well in Lopez Canyon near Sunland and reports a depth of 1500 ft. No oil showings have been found.

Using the lightest of portable equipment, Morton & Elder are drilling Lorenzen No. 1 a mile south of the town of Olive in Orange county. A 5 in. hole has been drilled to below 630 ft.

Island View Tests Five Points Well

Island View Oil Co. seems destined to obtain the fifth producer in the Huntington Beach Five Points area. With hole made to 4325 ft. and 7 in. casing cemented at 4240 ft., the company is preparing to complete its Day No. 1 on the pump.

North across the street from the Delaney producer, Owen Oil Co. is installing equipment in the old Reid Petroleum Co. rig. The location is considered proved.

In the Huntington Beach old field, V.R.G. Wilbur redrilled and recompleted Heaston No. 1 at 3575 ft. Initial production was mostly water but appeared to be cleaning up.

On the State Tideland lease, Southwest Exploration Co. is drilling No. 22 below 2349 ft. No. 21 is standing idle with surface casing cemented at 755 ft.

Exeter Suspends East Coyote Test

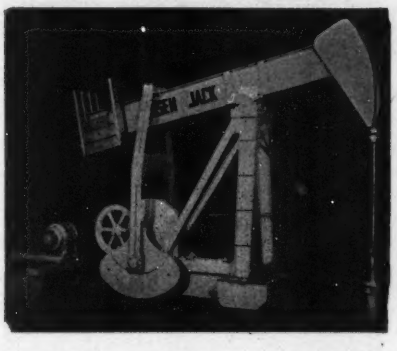
Exeter Oil Co. suspended drilling in its Stern No. 1 after failing to find production in the zone developed by Bartholomae Oil Co. at East Coyote. Located west of production, the well sought to extend field limits a quarter of a mile. Now idle at 4584 ft., the well may be plugged for a test of upper showings.

S. Rosecrans Test Cores Second Oil Sand

After coring only thin streaks of oil sand and gray sand in the upper section of the O'Dea zone, Darling Comm. No. 1 entered a promising horizon at 7725 ft. The first sand streaks, picked up at 7119 ft., gave light yellow cuts and continued to 7430 ft. where the formation became barren gray sand. After passing through a fractured interval from 7650 ft. to 7700 ft., a new zone was entered at 7725 ft., which to last reported bottom at 7840 ft., had totalled 38 ft. oil sand. Although no word has been received on the "bugs" the well is believed to be yet above the Eighth Callender zone of Dominguez.

Darling Comm. No. 1 is a joint project of Barnsdall Oil Co. and Wilshire Oil Co. and is located 525 ft. south of Redondo Blvd. and 210 ft. west of San Pedro St., half a mile east of Dr. Averill's small producers.

The third well of the Averill interests, located several hundred feet south of No. 2, and the lowest structurally of them all, is coring below 7350 ft. Across Compton Blvd. to the north of the Howard Slabaugh No. 1. After one fish was



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almost sidetracked to the old bottom at 6860 ft., a new twistoff occurred at 3500 ft.

Within the proved area, Union Oil Co. completed Rosecrans No. 34 at 7871 ft. and is preparing to drill No. 35.

Thorley Oil Co. has not yet obtained official sanction for its proposed deep test of the north end of Athens, the city contending the area is a residential district.

Untiring oil producers are "stripper" wells, with pumps which start automatically at 9 A.M. and shut down at 5 o'clock at night.

Two Companies Drill Richfield

Derricks have been erected by two different companies to drill new wells in the old Richfield field despite the lack of success of Traders Oil Co.'s deepening job.

Great Northern Oil Co. is rigging up to drill Oak No. 1 near the southwest corner of Morse and Van Buren Sts.

Welco Oil Co., a new concern headed by Pat Maley of Long Beach, is preparing to install equipment in a derrick recently built at the southeast corner of Cherry and Adams streets.

Basin Oil Spuds Potrero Club Well

Continuing with its development of the Potrero Country Club property, Basin Oil Co. spudded in its fifth well on the golf course. Foundation has been poured for No. 6 which will be drilled after the completion of No. 5.

The company's Transwestern No. 1 resumed drilling when tests near the 5000 ft. level were wet. This well is a whipstock job, being directionally drilled from its surface location west of Prairie to a predetermined spot beneath the cemetery.

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Coastal District

Ventura Avenue Leads Coastal Drilling Activity

With more than a score of rigs running, Ventura Avenue is not only the busiest field in the Coastal district but is one of the brightest spots in the state. Since the development of good production on the north flank, several independent companies have entered the field with very good success; among them Calif. Alliance Petroleum Co., British American Oil Producing Co. and Lloyd Corp.

Although the greater part of the field is in the hands of major operators, California Alliance Petroleum Corp., and British American each are drilling one well while Lloyd Corp. is running two strings of tools.

Next independent completion scheduled is British American's No. 8 on

COASTAL COUNTIES WILDCATS

Santa Barbara County

Area	Well	No.	Section	Depth	Status
Bicknell Area	Hogan Pet. Co., Zabala	1	33, 9-34	4155	Abandoned
Capitan	Litho Oil Co., Rhode I.	1	4, 4-30	3015	Idle
Carpinteria	Carpinteria Oil Co.	1	32, 4-25	2458	Redrilling
Carreaga	Barbara Pacific Oil Co.	A-A 2	8, 8-33	6820	Idle
Foxen Canyon	Richfield Oil Corp., Tinaquaic	1	36, 9-32	5541	Idle
Gato Ridge	The Petrol Corp., Magenheimer	S-21	2, 8-32	3680	Drilling
Orcutt	So. Calif. Drlg. Co., Houck	1	9, 9-33	5002	Idle
Lompoc	Sun-Bell Drilling Co.	1	28, 8-34	2800	Drilling
Los Olivos	United Western Oil Co.	1	15, 7-30	3935	Fishing liner
San Marcos	Richfield Oil Corp., San Marcos	1	20, 6-29	1961	Idle
[illegible]	Richfield Oil Corp., San Marcos	3	20, 6-29	1185	Drilling
Summerland	Glenray Oil Co., Glenray	1	1, 4-26	90	Idle
	Oil Group, Inc., Hyland	1	16, 4-26	1315	Idle
	Topeka Oil Co.	17–1	22, 4-26	1770	Idle
	San Luis Obispo County				
Elk Horn	Calif. Pet. Prod., Irons	1	19, 10-24	2425	Idle
	Newton, S. M., Stafford	1	18, 31-21	3975	Drilling
	Newton, S. M., Well	1	3, 32-21		Grade
	Temblor Oil Co.	1	22, 31-21	3465	Idle
Paso Robles	Epco, Inc.	1	27, 26-13	6010	Drilling
	Ventura County				
Ojai	Coronet Oil Co., Coronet	1	17, 4-21	2298	Bailing
Red Mountain	Martin, J. W.	3	15, 4-21	1900	Idle
Santa Susana	K.C. Oil Co., Marr	1	32, 3-17	215	Drilling
Sespe	Nevada-Fortuna Oil Co.	1	13, 4-19		Rig
	Renard Oil Co.	1	6, 4-19	300	Drilling
	Speik Oil Co.	1	33, 5-19	3960	Idle
Shiells Canyon	Galveston Oil Co.	1	5, 3-19	3140	Circ. oil
	Shomy Oil Co., Shomy	1	32, 4-19	825	Idle
Simi	Levesque, G. M.	1	17, 2-18	2210	Idle
Tar Creek	Section 20 Oil Co.	1	20, 5-19	4024	Drilling

the Bolsa Chica Hartman lease which is coring shale with streaks of good oil sand below 8460 ft.

Shell Oil Co.'s latest well on the Taylor lease No. 101, was very nearly a gasser, the production gauging 250 bbls. of oil and better than 4,000,000 cu. ft. of gas. The well is bottomed at 6950 ft. and has 7⅝ casing cemented at 5890 ft.

Union Oil Active In Old Santa Maria

Only operator active in the old Santa Maria field is Union Oil Co. On the Squires lease in sec. 26, 9-34, a new well, No. 21, is being drilled at approximately 2600 ft. On the adjoining Newlove property, the company is preparing to deepen an old hole, No. 19.

Galveston Retests Shiells Canyon Well

Preparatory to retesting its Shiells Canyon outpost well, Galveston Oil Co. is cleaning out a sand bridge which formed during a recent unsuccessful production test. Oil is being used as circulating fluid.

Since the completion of The Texas Co.'s last well, there has been no new development in the proved part of the field. Probably the next to start will be El Rancho Oil Co.'s rumored No. 4.

Cole 19 Flows 4500 b/d At Santa Maria Valley

Indicating that the old Paderewski ranch contains some of the best acreage in the Santa Maria Valley field, Fred E. Cole completed his No. 19 with initial production estimated at 4500 bbls. a day. Located in the south portion of the field in sec. 28, 10-34, the new well was bottomed at 5435 ft., where it was brought in with 370 ft. open in the Monterey. Choked to 24/64 in., production gauged 700 bbls. daily of 15 gravity clean oil under 300 lbs. flow pressure. Equipment is being moved to No. 20 which will be drilled on the same lease.

Transoceanic Drills Fourth Mesa Project

Transoceanic Oil Corp., headed by David M'divani, is preparing to drill its fourth well in the Santa Barbara Mesa field. The company's first three wells found modest but steady production in the Vaqueros horizon at less than 2000 ft.

Page Pet. Starts Nipomo Wildcat Well

Page Petroleum Co., a Los Angeles concern affiliated with Eureka Petroleum Co. and Epco, Inc., is preparing to spud in its wildcat well in the Nipomo area of San Luis Obispo county. Known as Callender-Mesa No. 1, the project is located in the northwest corner of sec. 15, 11-35, south of the old Aviation Oil Co. well which was said to have been abandoned at 1750 ft. in Franciscan.

Near the crossroads of Union, Epco, Inc., is deepening its well No. 1 below 6000 ft. after a two months shutdown. Top of Temblor was reported at 5350 ft.

Sunset Oil Enters Old Carpinteria Well

Continuing the search for oil in the Carpinteria area, Sunset Oil Co. has taken over the old well drilled at the southeast corner of Palm and Land Sts. within the townsite of Carpinteria. Drilled from the grass roots to a final depth of 2458 ft. last year, the original operators encountered much difficulty in keeping the hole straight, the deviation from vertical at 2400 ft. being in excess of 50 degrees to the north.

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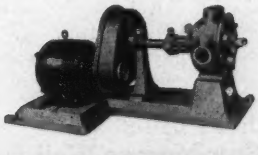

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VIKING PUMP COMPANY CEDAR FALLS IOWA

Sunset Oil Co. has plugged back to 200 ft. and will drill a new hole below that point. Monterey shale was entered at a depth of 35 ft. and the old hole was reported in Temblor at 1100 ft. Good oil showings were encountered at 1150 ft. and 1800 ft. but no production tests were made by the former owners.

Section 20 Company Cores Eocene Sand

Section 20 Oil Co., operating in sec. 20, 5-19 near Tar Creek, is coring oil stained Eocene sand below 4010 ft. The formation was topped at approximately 3900 ft. Several oil sands have been found in this well but none have carried sufficient saturation for commercial production.

Hogan Abandons Zabala Deep Test

Without finding worthwhile encouragement, Hogan Petroleum Co. drilled Zabala No. 1, Bicknell area wildcat, to 4155 ft. and summarily abandoned. The well failed to fully penetrate the Sisquoc formation which was entered at 400 ft. Located in sec. 33, 9-34 after drilling a series of core holes, Zabala No. 1 was intended as a test of the Monterey formations productive in nearby Santa Maria and Orcutt fields, but an unexpected thickening of the lower Pliocene discouraged further drilling.

Coronet Cleans Out Ojai Outpost Test

After sanding up on a production test, Coronet Oil Co.'s Ojai outpost well is being cleaned out for continued trials. With 288 ft. open to bottom at 2298 ft., the well pumped mud and water with oil coming in increasing quantities before excessive sand entry necessitated the pulling of the rods and tubing.

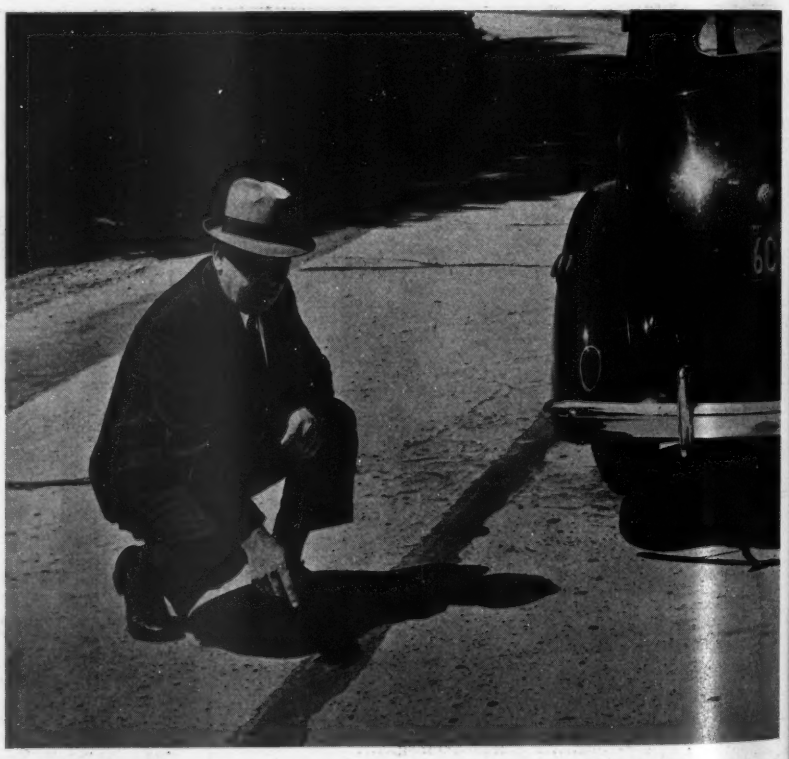
Lompoc Test Drills Below 3100 Ft. Level

According to latest repots, Sun-Bell Drilling Co.'s west Lompoc test is drilling below 3100 ft. in cherty brown shale. The well seeks a westerly extension of the old Lompoc field.

Richfield Drills 3rd San Marcos Well

Richfield Oil Corp.'s third San Marcos wildcat is drilling in shale below 1710 ft. Location is in projected sec. 20,6-29 in Santa Barbara county.

Digging a slush pit at Montebello, Calif. This is one of two P&H Model 150 shovels owned by the Mojave Construction Co. It is shown working as a clam-shell, digging a slush pit at Montebello, Calif. Convertible as a half-hard shovel, dragline, trench hoe, skimmer scoop, pile driver or crane, this machine is equipped with tractor-type crawlers, and its all-welded construction of alloy steels makes it lighter in weight yet far stronger.



Here's where modern traffic safety started! D. A. Beauregard, former deputy sheriff and traffic officer of Santa Cruz, California, points out the tar paint marking on the original road where, in 1920, he painted the first traffic lane stripe ever used in the West. The car carries the emblem of the Shell "Share-the-Road" Club which is conducting a national crusade for closer observance of traffic regulations.

Oil Industry's 80th Anniversary

Eighty years have passed since Uncle Billy Smith and his sons pulled their tools out of a little hole on the flats of Oil Creek at Titusville, Pennsylvania. August that year of 1859 had been notably hot throughout the country and Saturday, August 27, was no exception. Late that afternoon the depth of the hole measured 69 feet. As they prepared to draw the tools, they dropped six inches into a fissure. At that moment the first drilled oil well in history was "in" at 69½ feet.

No one of the actors in this drama could possibly foresee the consequences or the significance of this event. At the time it meant two things; first, that an idea advanced by George H. Bissel, a New York lawyer, was the answer to the problem of how to obtain petroleum in quantity; secondly, it was a vindication of one man's faith in the face of countless difficulties in the practical possibility of drilling a well for oil. Its significance, however, is broader than either of these for the Drake Well ushered in a new industrial era which remade civilization.

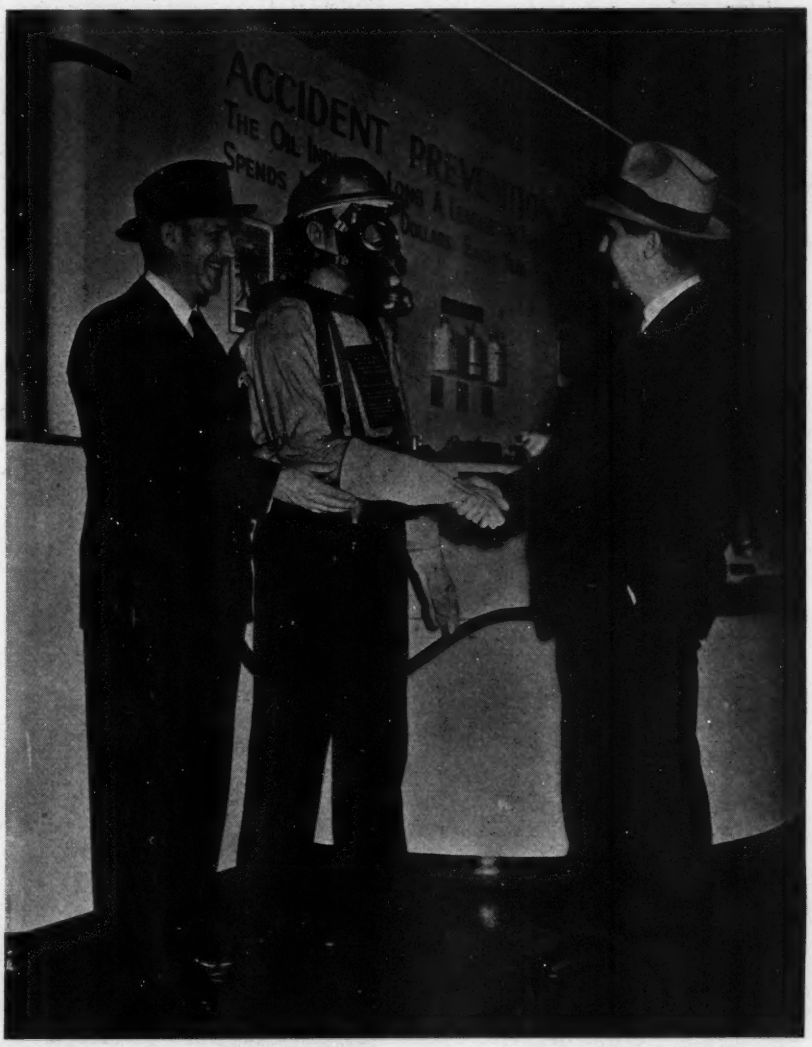
The story of Edwin Laurentine Drake and the drilling of the first oil well has been told many times. As a story of perservance, ingenuity, and the adaptation of practical abilities it still bears repeating. Edwin L. Drake was born, March 29, 1819, on a farm near Greenville, New York. The first nineteen years of his life were spent in farming, both in New York and Vermont. At the age of 19, Drake moved westward to Buffalo, New York, where he obtained a position as night clerk on a lake boat, traveling between that city and Detroit. At the close of the lake shipping season he continued westward to an uncle's farm at Ann Arbor, Michigan, where he remained about a year.

After a brief sojourn as a hotel clerk in Tecumseh, Michigan, he returned east, taking a position as clerk in a dry goods store, first in New Haven and later in New York City. While in the latter position, Drake married. His wife's ill health, however, necessitated moving to Springfield, Massachusetts. Here Drake worked as express agent for the Boston and Albany Railroad. In 1849 he gave this up to become a conductor on the New York and New Haven Railroad and moved his wife and one child to New Haven, Connecticut.

In 1854 his wife died and Drake broke up his home and moved with his child to the Tontine Hotel in New Haven. It was here that he first became interested in oil. During his residence there he met James Townsend, president of the Pennsylvania Rock Oil Company. Townsend persuaded him to invest $200 in stock in the company. In 1857 ill health forced Drake to resign his position as conductor.

About this time Townsend and his associates were planning to make a further investigation of property the company owned at Titusville, Pennsylvania. George H. Bissel, one of the original incorporators, had conceived the idea of drilling for oil. This idea was the result of a very small incident. One day Bissel chanced to pass a drug store on Broadway when his attention was caught by a window display of Samuel M. Kier's "Rock Oil." The label showed a picture of a salt well derrick, a well of the type from which this medicinal oil came.

The company now sought to find out the practicability of such a method. Townsend, knowing Drake was unemployed, persuaded him to take on the investigation.



"Pete Roleum, this is Mr. Davies," says B. I. Graves, president of Golden Gate Exposition Petroleum Exhibitors, Inc., and vice-president in charge of sales, Tide Water Associated Oil Co., in introducing R. K. Davies, vice-president Standard Oil Co., to the dummy who has shaken hands with thousands of visitors to the petroleum industry exhibit on Treasure Island. The occasion was the visit to the exhibit of the Fair Practices Association (Petroleum Products) of which Mr. Davies is chairman. Pete wears the "hard hat," gas mask, asbestos gloves and hard-toed shoes which are standard equipment in the petroleum industry's accident prevention program.

So it was that in December, 1857, Drake set out for Titusville. On the way he stopped off at Syracuse, New York, to inspect the salt-wells there. Proceeding on to Erie, he took a stage for the 40-mile trip to Titusville. He arrived in that village to find his mail addressed, "Colonel E. L. Drake." This title, by which he is known to history, was an invention of Townsend's, who felt that it would add dignity to his mission. Drake spent three days inspecting the property an its oil spring and left convinced that oil in quantity could be obtained by drilling.

On the return trip he stopped at Tarentum, Pennsylvania, to observe the drilling salt wells in that place. Upon his return to New Haven, his report was accepted by Townsend and his associates. A lease was made to E. B. Bowditch and E. L. Drake, with the understanding that they would work the property. The two principal stockholders, George H. Bissel and Johnathan G. Ereleth, his law partner, however, were dissatisfied and a supplementary lease was made, improving the terms of the first lease.

A new company, the Seneca Oil Company, was organized by Townsend and others, and the Bowditch-Drake lease was assigned to the new company. It was this company that furnished the funds for the first drilled oil well. Drake was made general agent of the company at a salary of $1,000 a year. In addition, the company advanced another $1,000 for expenses.

Drake, who by this time had remarried moved with his family to Titusville in May, 1858.

In the year that followed Drake's varied experience which had made him a veritable "Jack-of-all-trades" stood him in good stead. Work was started at once clearing up the old ditches around the oil spring and putting it in shape to gather oil by a skimming process. By June Drake was gathering 10 barrels of oil a day in this way. At the same time he started digging a well some 150 feet from the site of the spring. However, when the diggers struck water instead of oil, he abandoned this project. Deciding that it was cheaper to drill a well, he made a trip by horseback to Tarentum, Pennsylvania.

Here he observed the operations of drilling and engaged an experienced driller. On his return he purchased a steam engine and boiler in Pittsburgh. Once more back in Titusville, he spent the better part of the summer erecting an engine house and a wooden derrick. By August all was in readiness with two exceptions; his power equipment had not arrived and the driller had failed to appear. A second trip to Tarentum failed to locate the man and Drake returned. Early in the fall his engine and boiler arrived and were set up. There was nothing to do now but wait for spring.

In February, 1859, Drake returned to Tarentum and engaged another driller who likewise failed to put in an appearance. Drake was all but ready to give up at this. Through Lewis Peterson, a salt-well owner, he learned of a William A. Smith, a blacksmith, who made drilling tools and did "fishing" jobs on the salt-wells. In a last effort, Drake interviewed the man and hired him, together with his two sons as helpers. Smith agreed to make the tools and come to Titusville. He arrived about the middle of May, 1859.

Drake in the meantime had started digging a hole, but seeping water caused the walls to cave in. When Smith started work he tried pumping the water out but this was unsuccessful. Drake then introduced the idea of casing. Ten-foot sections of cast iron pipe were driven down to the rock. By early June drilling had commenced.

People in the village were most skeptical of the project and with one or two exceptions had no faith in it. They called it "Drake's Folly" and opined he was wasting time and money. Of this latter, Drake was having difficulty enough in obtaining it to waste. By the beginning of the summer of 1859 the Seneca Oil Company had advanced $2,000. On April 1, 1859, they sent $500 but refused any more. For a time Townsend advanced funds out of his own pocket, but he too became discouraged with the lack of results and with his last remittance advised Drake to pay his bills and return.

Drake, however, was made of stern stuff and refused to admit defeat. On

Viewing a model drilling rig, one of the features of the Petroleum Exhibit at the Golden Gate International Exposition on Treasure Island, are Austin Black (left), general manager of Petroleum Exhibit, and Axtell J. Byles, president of the American Petroleum Institute, a recent visitor from New York.

top of these financial difficulties he was involved in personal financial trouble himself. A loan raised by two friends partially solved this problem and gave him a little to work with.

So through June, July, and the better part of August, the work went on. Slowly, on an average, of three feet a day, the bit cut through the rock. Saturday, August 27, 1859, arrived and with it came oil. There on the flats of Oil Creek, a man's idea was translated into reality and a man's faith in his work was rewarded.

The Drake Well not only unlocked nature's storehouse of oil but paved the way for the liberation of man's inventive genius.

Parkersburg Rig & Reel Acquires O. C. S. Holdings

An interesting development in the Oil Field Equipment Industry is the recent announcement by C. A. Ruf, vice president and general manager of the Parkersburg Rig and Reel Co. that the stockholders of that company had been asked to approve the acquisition of the Common Stock of The Oil Country Specialties Manufacturing Co. at a meeting to be held on Sept. 8.

The Parkersburg Co. with plant and offices at Parkersburg, West Virginia, was founded in 1897 by John M. Crawford, the present chairman of the board. His brother David B. Crawford, president of the company, has been associated with the business for 40 years. Mr. Ruf started with the company 20 years ago. B. M. Farson is secretary and treasurer

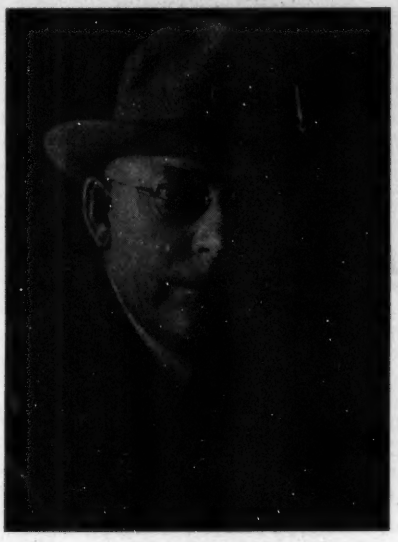
With warehouses serving the Oil and Gas Industry located in all principal producing areas in this country Parkersburg Rig and Reel Co. has a well established business, manufacturing and marketing steel derricks, bolted and welded steel tanks, gear driven pumping units, hydromatic brakes, and in May of this year added the Smith Separator to its line of products.

The Oil Country Specialties Mfg. Co., with manufacturing plants located at Coffeyville, Kan., Houston, Tex., and Long Beach, Calif., has played an important part also in serving the Oil and Gas Industry.

W. P. Turner, president, located in Long Beach, California, and D. R. Brown, vice president and general manager, located at Coffeyville, Kansas, organized the company 20 years ago. D. C. Myers is secretary and treasurer.

O. C. S. manufactures and markets a line of chain driven pumping units, clutches, hoists and special machinery for the oil industry

If the acquisition is approved by Parkersburg Rig and Reel stockholders, it is contemplated that the two organizations will be conducted independently, continuing present operating policies of each company in effect as heretofore.



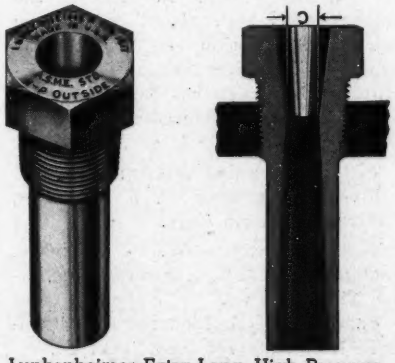
W. P. Turner

The proposed acquisition will, it is believed, improve the companies' ability to better serve the Oil and Gas Industry.

Lunkenheimer Offers New Boiler Fusible Plugs

The Lunkenheimer Co. has just placed on the market a new Extra Long, High Pressure Fusible Plug for use on high pressure oil field boilers. It is inserted from the outside (fire side) of the plate or tube.

Each plug is stamped "A. S. M. E. Standard" on the bronze casing to signify conformance with A.S.M.E. code specifications in materials, design and



Lunkenheimer Extra Long, High Pressure Fusible Plugs.

construction. A. P. I. Field Boiler Code requirements are the same as the A. S. M. E. Code.

The casing is bronze; the fusible core is pure Banca tin carefully alloyed to the casing. The extra long construction insures the plug protruding into the water far enough to allow sufficient radiation of heat from the fire box and thus prevent the core from melting at high water level. However, the plug will actuate should the water drop below the safe low level, or if excessive foaming occurs at low water level, which might injure the crown sheet or tubes.

The long pipe thread fits not only standard pipe threaded openings, but also openings that have been stretched oversize.

A. W. Shaw, left, formerly with Ingersoll-Rand Co., has recently been appointed manager of Los Angeles branch of Paramount Manufacturing Co., 2336 East 38th St., replacing W. A. Clements, right, who has been transferred to the head office in San Francisco.

New Rotary Lining For Oil-Field Service

Of interest to oil field owners and operators is an illustrated folder describing the new J-M 420 brake lining, which was especially developed by the Johns-Manville Research Laboratories for oil field service. Included in the folder are the frictional coefficient, size limits, tolerances, etc., of the new lining, as well as a pictorial presentation of its outstanding features.

While the lining is suitable for rotary drawworks brakes on wells of all depths, according to the manufacturer, the special features built into this lining make it particularly useful in deep well drilling. The new folder presents a graphic explanation of these construction features.

Copies of the folder, Form FM-10A, are available upon request to Johns-Manville, 22 East 40th St., New York, N. Y.

Erratum

Harold C. Hotchkiss, of Grady & Hotchkiss, attorneys at law, was erroneously listed as connected with Howard Oil Co., in the 1939 California Oil World Directory. To avoid further imposition upon Mr. Hotchkiss' time by persons wishing to contact Howard Oil Co., readers of the California Oil World are asked to note this correction in copies of their Directory.

Thomas M. Penny

R. Stanley Smith

Smith Precision Products Co. To Manufacture Specialties

The Smith Precision Products Co., 1135 Mission Street, South Pasadena, Calif., has recently been organized by R. Stanley Smith and associates, including Thomas M. Penny who has been appointed sales manager.

The new company will manufacture several specialties for application in the sales and production divisions of the oil trade, production having already been started at the Smith plant on a new and highly efficient type of rotary pump which Mr. Smth has had under development and test over a period of years, and which is particularly adapted for handling gasoline and butane.

Mr. Smith is perhaps best known to the oil industry through his development and manufacture of Smith Meters. His former company, the Smith Meter Co. of Los Angeles, was purchased by the A. O. Smith Corp. of Milwaukee about two years ago. Since that time, and until recently, Mr. Smith has been in charge of what was known as the South Pasadena Research Division of the A. O. Smith Corp.

Mr. Penny, formerly with Smith Meter Co. of Los Angeles and later with the Smith Meter Division of the A. O. Smith Corp., was branch manager for Smith Meters successively at Chicago, Houston and Denver.

The shop personnel of the new organization includes men who have worked with Mr. Smith for many years in the development of the earlier lines, and it is to be expected that the product of the new company will prove of exceptional interest to the trade.

C.N.G.A. Fall Meet Program Announced

In anticipation of one of the largest and best attended all-day technical sessions in the organization's history, the program for the California Natural Gasoline Association's annual fall meeting is announced jointly by P. S. Magruder, association president; Walter Dayhuff, chairman of the program committee, and Harry Fiske, chairman of the entertainment committee.

As was the case last year, the Ambassador Hotel, Los Angeles, has been selected as the setting for the event which will be held this year on Friday, Nov. 17. As is customary, the all-day event will open with a morning session at 9:30 a.m. with adjournment at noon. The meeting will be called to order again at 2:00 p.m. for the afternoon session, while at 7:00 p.m. the Association's annual banquet with a program of entertainment will be held.

In commenting on the program, Walter Dayhuff pointed out that special emphasis has been placed on drafting the morning session and that both in caliber of speakers and subjects presented, this session has been carded to match the afternoon events. The entire program for the day is as follows:

9:30 a.m., morning session:

President's address, P. S. Magruder, General Petroleum Corp.

Technical Session—W. W. Robinson, chairman, C.N.G.A. Technical Committee, The Texas Co.

Paper—C.N.G.A. Liquefied Gas Standards, J. S. Gallagher, The Texas Co.

Paper—Advances in Analytical Fractionation Technique, W. J. Podbielniak.

Paper—The Centrifugal Super-Contactor, W. J. Podbielniak.

2:00 p.m., afternoon session:

Paper—Alkylation—Speaker to be announced later.

Paper—Role of Natural Plant Products in Motor Fuels of the Future, C. C. Moore, Union Oil Co.

Paper—Natural Gas Conservation and Utilization in California, Roy M. Bauer, Southern California Gas Co.

7:00 p.m., evening session:

Annual Association banquet and show.

Wilson Manufacturing Head Vacations in Los Angeles

John Wilson, president of Wilson Manufacturing Co., accompanied by Mrs. Wilson and two small daughters, has been vacationing in Los Angeles.

While here, Mr. Wilson, in the company of Roy Hitchcock and Ches Braly of H. & B. Sales, who are Pacific Coast representatives for Wilson Manufacturing Co., visited the oil fields of Los Angeles Basin and San Joaquin Valley. Mr. Wilson called on his many friends of the oil industry to whom he described the many new developments in his drilling and production equipment.

Mr. Wilson evidenced considerable interest in the "Champion" line of steel rotary hoses and low pressure swing joints now being manufactured and distributed by H. & B. Sales Co., in the application of these items to the oil industry as well as other industries.

Capt. A. E. Higgins Traveling by Air

Capt. A. E. Higgins, vice-president in charge of sales for Pittsburgh Equitable Meter Co. and Merco Nordstrom Valve Co., is making a series of flying trips throughout the country. Piloting his own plane, Capt. Higgins has found that he can cover several thousand extra miles of traveling to keep in close contact with the various offices of his organizations from the Pacific to the Atlantic.

During the past three weeks he has been on the Pacific Coast conferring with executives of various petroleum companies, gas corporations and public utilities. He has also conducted a series of sales conferences with West Coast division managers outlining merchandising plans for the balance of 1939. Capt. Higgins flew from Los Angeles to Dallas during the past week to remain for a few days, and is planning to attend the sessions of the Pacific Coast Gas Association in San Francisco, Sept. 6 to 9.

Under Capt. Higgins' direction, the sales engineering forces of his two companies are being augmented to give more comprehensive service in each territory.

Fiber glass insulation cuts a motor's size one-third, permitting 100% overloading of electromagnetic devices and operation at far higher temperatures.

Ingersoll-Rand New Compressors

A new line of industrial compressors and vacuum pumps in sizes of from ¾ through 5 hp. is announced in an illustrated catalog covering the complete line of Ingersoll-Rand Type 30 Compressors. These new compressors, em-

The new Ingersoll-Rand Industrial Type 30 "Finger Valve" compressor — sizes ¾ through 5 hp.

bodying a simplified "Finger Valve" construction, form only one part of the complete range of Type 30 Compressors, which are built in sizes up to 15 horsepower for pressures as high as 1000 pounds. They are available with or without drive, receiver-mounted or bare.

Announcement is also made of new paint-spray compressor units which utilize the "Finger Valve" construction.

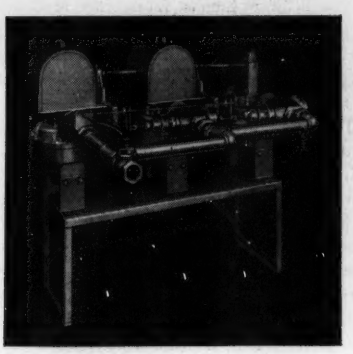
The catalog contains both installation and shop views of the machines, together with complete operating and physical characteristics of each. Copies of the booklet, form 7502-J, are available from the Ingersoll-Rand Co., 11 Broadway, New York City, or any of their branch offices.

New Bowser System Simplifies Blending

The common practice in compounding, blending or mixing liquids in the oil business is to pump various quantities of certain ingredients into a mixing tank and then, by means of air or mechanical agitation, mix the liquids. This procedure has been followed for centuries, and is not only slow but involves considerable labor cost and particularly greater investment in buildings, tanks, and in stocks of finished products, say engineers of S. F. Bowser & Co., Inc.

This company, having specialized in the design and manufacture of liquid handling equipment for almost 55 years, and having manufactured many types of meters during that period, has intensively worked on the problem and as a result the Xacto Proportioning System came into being. It has been given exhaustive tests—in fact, units are in daily operation and performing to the utmost satisfaction of the owners, the engineers say.

The Xacto Proportioning System differs from anything that has ever before been introduced in that the liquid is actually measured by Xacto Meter and the ratio of the various ingredients positively



and automatically controlled by the meters themselves.

This unit has just been announced to the S. F. Bowser & Co. sales organization. In fact, it is so new that information concerning it has not been generally distributed. A bulletin has been released which gives a comprehensive idea of the system . . . its extreme flexibility, the wide range of types and sizes for meeting any capacity requirement or type of liquid, its positive control and dependable accuracy, and the many savings it makes possible.

Chain Belt Acquires Baldwin-Duckworth Corp.

Chain Belt Co. of Milwaukee, one of the leading manufacturers of sprocket chain, conveyors and construction machinery, has acquired the business and all of the net assets of the Baldwin-Duckworth Chain Corp. of Springfield, Mass. The plan of acquisition, which is in effect a merger of two well-known and long established companies, provides for the issuance to Baldwin-Duckworth stockholders of 139,537.5 shares of the no par common stock of Chain Belt Co.

To provide this stock, the stockholders of Chain Belt Co. approved the authorization of an additional 140,000 shares to bring the total number of Chain Belt Co. shares authorized to 500,000.

The merger of Chain Belt and Baldwin-Duckworth grew out of a selling arrangement between the two firms. For some time Chain Belt has marketed finished roller chain made for it by Baldwin-Duckworth, and wished to assure itself of a permanent source of supply. There is little overlapping of products Chain Belt never having manufactured any of the principal products of Baldwin-Duckworth. Thus, Chain Belt's line is rounded out by the addition of finished roller and automotive timing chains, cut tooth sprockets, flexible couplings and certain types of light conveyor chains.

Baldwin-Duckworth Corp. was incorporated in 1930, under the laws of the State of Massachusetts, through the merger of the Baldwin Chain & Manufacturing Co. of Worcester, Massachusetts and the Duckworth Chain & Manufacturing Co. of Springfield.

The Duckworth company was originally established in 1871. Its early efforts were devoted chiefly to the manufacture of parts for loom and knitting machines. In 1891 the company began the manufacture of the first bicycle chains, which in turn led to the subsequent production of chains for the motorcycle industry. In 1924 the Duckworth company started making inverted tooth type, or so-called Silent chain, for use on automotive cam shaft drives.

The Baldwin company at Worcester was originally established in 1896 to produce finished roller, or so-called high-speed roller, chains similar to those made by the Duckworth company but of larger dimensions for general industrial purposes. These are used in such industries as oil, lumber, pulp and paper, mining, steel and food.

The Chain Belt Co. was incorporated in 1892 in the State of Wisconsin. However, the company actually began business in 1891 with but one type of chain, malleable detachable and a limited line of sprocket wheels. Since that time the company has added many other types of chains, including Griplock, Unicast, Durobar, Chabelco and others, all of which were developed by the company and marketed under the trade name Rex. In fact the company's growth has been largely from within and not to any great extent to the acquisition of established businesses.

The products of Baldwin-Duckworth of course complement the products of Chain Belt only in its chain division. In addition to chain, Chain Belt manufactures and sells other lines which fall into the major classifications of construction machinery, conveyers and castings.

The newly acquired plants at Springfield and Worcester, Mass. will retain their identity and will be known as Baldwin-Duckworth, Division of Chain Belt Co. George H. Empsall, Frank J. Weschler and George D. Gilbert all directors of the former Baldwin-Duckworth Chain Corp., were elected directors of Chain Belt Co. In addition Mr. Empsall and Mr. Weschler were elected vice presidents of the company. Mr. Weschler was also appointed general manager of the Baldwin-Duckworth Division and Mr. Gilbert, general sales manager of the Baldwin-Duckworth Division.

Dilgarde Appointed By Security Engineering

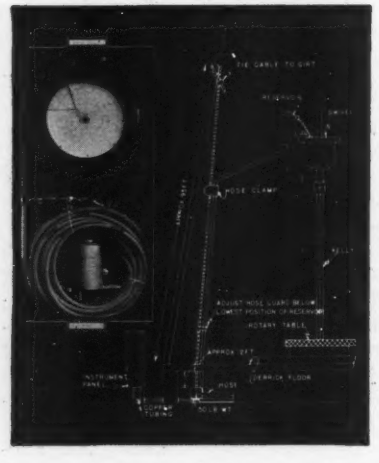
E. C. Dilgarde of Casper, Wyo., who has been identified with the marketing of oil well supplies in the Rocky Mountain area for many years, has recently been appointed independent sales and service representative for Security Engineering Co., Inc. of Whittier, Calif.

Under the plan, Mr. Dilgarde will direct the sales and service in the states of Colorado, Idaho, Montana, Utah and Wyoming and the northern half of New Mexico for Sievers Reamers and Reamer Parts, Securaloy drillable products and other items manufactured and marketed by Security Engineering Co., Inc. A suitable warehouse stock of Security Products will be carried at 130 West Railroad Avenue, Casper, Wyo., but the fields will be served jointly from this warehouse and by established distributors and dealers throughout the territory.

Penetration Rate Recorder Announced by Martin-Decker

An Automatic Rate of Penetration Recorder for use on drilling wells has been announced by Martin-Decker Corp., Long Beach, Calif.

The Rate of Penetration Recorder solves the problem of logging formations as they are drilled. It eliminates the inaccuracies of ordinary manual computing methods and provides geologists, engineers, drillers and drilling departments with a simple, positive way to secure time-drilling information automatically and continuously.



Completely automatic in operation, the instrument has only three simple parts—a water reservoir attached to the swivel, a small-diameter rubber hose connecting the reservoir to the recorder, and a special low-range pressure recorder using charts graduated in "feet of penetration." The system is filled with clear water or an anti-freeze solution for cold weather. In operation, the Recorder charts the rate of change in hydrostatic pressure from the reservoir as the kelly lowers while drilling. It instantly records formation breaks as they occur and charts a clear, continuous record of bit penetration rate.

The Martin-Decker Rate of Penetration Recorder fills a long-felt need in drilling control technique. For example, the picture it gives of formation changes is invaluable in deciding the coring program. The instrument also indicates porosity of the formations, as well as the formation breaks. This information is a useful supplement to the electrical log, especially in limestone formations. The graph obtained is also valuable as a guide for future production work such as perforating, running tubing, setting packers, etc. When compared to weight, torque, table speed and mud pressure, the instrument gives a clear picture of bit performance in various formations.

For full particulars, write direct to Martin-Decker Corp., Long Beach, Calif.

E. M. Smith Takes Globe Management

Announcement to the effect that E. M. Smith, founder and former president of Emsco Derrick & Equipment Co. will continue to be active in the manufacture and distribution of oil well tools in the capacity of general manager of Globe Oil Tools Co., Los Nietos, Calif., will be news of special interest to his legion of friends throughout the world petroleum industry.

"E. M." began his career as a salesman in the California oil fields back in 1907. During the ensuing thirty odd years of his activities he has organized more than a score of companies which have gained world prominence through his aggressive leadership. He and his associates in these enterprises have been largely responsible for the era of greatest progress in oil well drilling procedure in all petroleum history, through the development of new and radically changed designs of the major items of oil field equipment; and particularly through the adoption of steel in place of wood as the basic material for such equipment.

Globe Oil Tools Co. is one of the companies organized by "E. M." during that memorable period, being a consolidation of three manufacturers of drilling, coring and reaming tools. Notable among the present line of Globe tools is the Globe Type "H" Rock Bit, manufactured with four different cutter assemblies for digging a wide range of formations; the Globe Box and Pin Type Drilling Bits, produced in five drag types and one fluid action type for use in formations that can be cut with the circulation fluid; and, of course, the original but greatly improved W-K-W type bits that are used wherever oil wells are drilled. In addition to these, several new items have been developed during the past few years, which will be announced in the near future, and will prove of great interest to drillers in all parts of the world. All except the very latest of these products are illustrated and described in the company's Catalog No. 39.

For many years "E. M." has been a world traveler, having personally visited practically every active oil field in the world at one time or another; and undoubtedly enjoys a wider acquaintance among oil workers than most any one man in the industry. Although his executive duties with the Globe Co. will require his presence at the company's headquarters a good portion of the time, Mr. Smith will continue as in the past to spend as much time as possible out in the field where actual operations are in progress. The company now has branches in Houston, Oklahoma City, and Casper; while all export business is handled through the New York office at 30 Rockfeller Plaza. Coincidentally with the announcement of his active participation in the affairs of the Globe Co., "E. M." states that the company shortly will launch an aggressive campaign of distribution that will make Globe tools quickly available to even the remotest field or well.

California Companies Enter Northern Fields

Coincident with a renewal of interest in the Canadian Border fields are announcement of two new wells by California operators.

In the North Cut Bank field of Montana, Italo Petroleum Corp. is preparing to develop a block of 3000 acres. The first well, already contracted for, is called Cornett No. 1 and is located in the northeast quarter of sec. 30,37n-3w.

On the Canadian side of the international line, Terminal Oil Co. of Washington and E. L. Cord of Los Angeles have brought in a new heavy unitized diesel powered drilling outfit to drill in the northeast quarter of sec. 35-3-23w4. The site is on the Malmberg lease, Spring Coulee.

Possibly presaging the early entrance of other California companies is the presence in the area of W. S. McCabe of Superior Oil Co. and Everett C. Edwards of General Petroleum Corp., formerly of Bakersfield. D. B. Myers prominent Union Oil Co. geologist, was a recent visitor to the northern fields.

PRODUCTION :-: DEVELOPMENT

(Figures of Production and Stocks are in barrels of 42 Gals.)

Group No. 1	Total Production July	DAILY AVERAGE July, 1939	June, 1939	July, 1938
Arvin	42,340	1,366	944	.....
Belridge—North	367,110	11,842	12,042	11,602
Belridge—South	35,164	1,134	1,128	1,033
Canal	171,137	5,521	5,234	2,441
Canfield Ranch	3,168	102	52	107
Coalinga	593,432	19,143	13,490	9,964
Cole's Levee	25,855	834	686	.....
Edison	70,273	2,267	2,276	2,691
Elk Hills	331,072	10,680	10,605	10,541
Fruitvale	191,725	6,185	6,406	7,552
Greeley	70,269	2,267	1,980	3,291
Kern River	352,641	11,375	10,950	11,547
Kettleman Middle Dome	864	28	29	49
Kettleman North Dome	1,623,982	52,386	52,513	66,363
Lost Hills	101,825	3,285	3,153	3,708
McKittrick	113,366	3,657	3,715	3,131
Midway-Sunset	1,560,102	50,326	52,486	59,015
Mountain View	253,494	8,177	8,446	9,905
Mount Poso	344,302	11,106	11,130	15,760
Rio Bravo	241,840	7,801	7,638	5,640
Round Mountain	259,320	8,365	8,530	14,564
Strand	7,690	248	203	.....
Ten Section	284,884	9,190	9,039	6,949
Tupman	14,939	482	492	.....
Wasco	37,746	1,218	1,129	386
Wheeler Ridge	10,023	323	330	309
Group No. 2				
Capitan	72,177	2,328	2,416	2,804
Elwood	126,944	4,095	3,824	5,781
Rincon	77,916	2,514	3,733	4,351
San Miguelito	78,186	2,522	2,464	2,399
Santa Barbara	9,934	321	297	405
Santa Maria	630,394	20,335	19,771	11,925
Summerland	992	32	26	28
Ventura Avenue	1,137,781	36,703	38,754	35,127
Ventura-Newhall	199,807	6,445	6,196	5,052
Watsonville	930	30	30	35
Group No. 3				
Brea-Olinda	176,619	5,697	5,771	5,818
Coyote—East	79,766	2,573	2,540	3,413
Coyote—West	310,439	10,014	9,378	8,480
Dominguez	545,366	17,592	17,979	23,772
El Segundo	92,463	2,983	3,187	9,431
Huntington Beach	783,392	25,271	26,491	32,303
Inglewood	395,497	12,758	12,725	14,179
Lawndale	1,446	47	33	90
Long Beach	1,399,526	45,146	45,743	58,122
Los Angeles—Salt Lake	15,480	499	482	543
Montebello	576,883	18,609	20,068	10,719
Playa Del Rey	153,878	4,964	5,127	6,138
Potrero	34,096	1,100	1,131	802
Richfield	272,793	8,800	8,970	8,959
Rosecrans	333,535	10,759	11,507	10,482
Santa Fe Springs	849,462	27,402	27,509	32,840
Seal Beach	213,838	6,898	7,025	8,651
Torrance	520,428	16,788	18,093	16,192
Whittier	29,450	950	970	925
Wilmington	2,575,159	83,070	80,510	94,768
Total	18,803,140	606,553	607,376	661,082
June	18,221,295	607,376		
Decrease (*Increase)	581,845*	823		

SUMMARY OF CALIFORNIA OILFIELD OPERATIONS FOR JULY, 1939—STOCKS HELD IN PACIFIC COAST TERRITORY BY CALIFORNIA OIL COMPANIES

	July 31, 1939	June 30, 1939	July Changes	Dec. 31, 1938 (Reclassified)
1. Gasoline-Bearing Crude	38,200,974	38,806,186	— 605,212	36,225,312
2. Non-Gasoline-Bearing Crude	14,390,754	14,206,766	+ 183,988	16,282,177
3. Unblended Nat. Gas	2,352,460	2,396,219	— 43,759	2,699,455
4. Gasoline (not including distributing and service stations	13,775,601	14,129,499	— 353,898	13,259,369
				1,566,349[a]
5. Naphtha Distillates	1,360,988[a]	1,574,503[a]	— 213,515	1,566,349
6. Gas Oil and Diesel Oil	10,071,238	10,333,510	— 262,272	10,539,937
7. Fuel Oil Residuum	71,275,300	70,841,319	+ 433,981	70,957,881
8. All Other Stocks	7,419,153[b]	7,172,119[b]	+ 247,034	6,153,809[b]
TOTAL	158,846,468	159,460,121	— 613,653	157,684,289
[a]Estimated amount of unfinished gasoline contained in item No. 8	1,122,574	1,310,625		1,350,379
[b]Coke incl. in item No. 8	361,629	284,089		92,066

Group No. 1	New Rigs Up	Prodcers Active Drilling	Com-pleted	Daily Initial Output	Active Pro-ducing	Abandoned Wells Drillers	Pro-ducers
Arvin	..	5	2	4,230	4	....	....
Belridge—North	2	3	2	674	69	....	....
Belridge—South	..	....	....	.....	86	....	....
Canal	1	2	2	3,492	25	....	....
Canfield Ranch	..	....	....	.....	1	....	....
Coalinga	4	12	3	9,587	862	2	3
Cole's Levee	3	3	2	2,820	6	....	....
Edison	..	1	1	50	88	....	1
Elk Hills	..	....	1	50	171	....	....
Fruitvale	3	5	....	.....	172	1	1
Greeley	1	4	1	3,800	18	....	....
Kern River	..	2	1	10	1,415	2	....
Kettleman Middle Dome	..	....	....	.....	3	....	....
Kettleman North Dome	4	12	6	13,347	220	....	1
Lost Hills	..	2	....	.....	282	....	....
McKittrick	..	....	....	.....	199	1	1
Midway-Sunset	1	6	2	80	2,574	2	3
Mountain View	1	1	....	.....	182	....	....
Mount Poso	..	....	....	.....	281	....	....
Rio Bravo	1	2	1	3,080	32	....	....
Round Mountain	6	6	1	75	207	....	....
Strand	2	2	....	.....	1	....	....
Ten Section	1	1	1	2,414	33	....	....
Tupman	..	1	....	.....	2	....	....
Wasco	..	1	....	.....	6	....	....
Wheeler Ridge	..	....	....	.....	33	....	....
Group No. 2							
Capitan	..	....	....	.....	46	....	....
Elwood	..	....	....	.....	81	....	....
Rincon	..	1	....	.....	52	....	....
San Miguelito	..	2	....	.....	20	....	....
Santa Barbara	..	....	....	.....	27	....	....
Santa Maria	2	4	....	.....	303	2	....
Summerland	..	....	....	.....	19	1	....
Ventura Avenue	4	13	4	3,613	279	....	....
Ventura-Newhall	2	7	2	1,924	550	1	1
Watsonville	..	....	....	.....	7	....	....
Group No. 3							
Brea-Olinda	1	1	....	.....	356	....	....
Coyote—East	1	1	....	.....	78	....	....
Coyote—West	..	....	1	331	67	....	....
Dominguez	1	1	2	1,510	162	....	....
El Segundo	..	....	....	.....	50	....	....
Huntington Beach	1	4	3	580	539	....	2
Inglewood	..	....	....	.....	216	....	....
Lawndale	..	....	....	.....	6	....	....
Long Beach	1	5	1	10	1,216	2	5
Los Angeles-Salt Lake	..	....	....	.....	111	....	....
Montebello	19	40	10	9,505	257	....	....
Playa Del Rey	1	....	....	.....	174	....	3
Potrero	..	....	....	.....	14	....	....
Richfield	..	1	1	25	296	1	....
Rosecrans	2	5	3	5,14	134	2	....
Santa Fe Springs	..	....	....	.....	579	....	2
Seal Beach	..	....	....	.....	106	....	3
Torrance	1	2	1	110	720	2	3
Whittier	..	....	....	.....	150	....	....
Wilmington	15	16	21	9,337	686	....	....
Miscellaneous Drilling	8	29	....	....	.....	8	....
Group No. 4—Gas Fields							
Buena Vista Lake	..	....	....	.....	1	....	....
Buttonwillow	..	....	....	.....	....	....	....
Chowchilla	..	....	....	.....	....	....	....
Delano	1	....	3	Gas	1	....	....
Dudley Ridge	..	....	....	.....	....	....	....
Goleta	....	....	....	.....	....	....	....
Marysville Buttes	....	....	1	Gas	1	....	....
McDonald Island	....	....	....	.....	4	....	....
Rio Vista	....	....	....	.....	21	....	....
Semi-Tropic	....	....	....	.....	....	....	....
Tracy	....	....	....	.....	....	....	....
July	90	203	79	71,168	14,303	28	29
June	93	191	59	46,736	14,044	23	32
Increase (*Decrease)	3*	12	20	24,432	259	5	3*

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Large maps of Los Angeles Basin oil fields and map showing all California oil fields. Price $15.00 each on paper and $20 each on cloth. Individual state oil and gas maps of Mid-Continent and Rocky Mountain regions. Maps show geological cross sections at base. These maps indicate wells drilling, wells producing and abandoned, with depths.
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Oil Men's Calendar

C.N.G.A. Meeting First Thurs. Each Month.

October

4-6—American Institute of Mining & Metallurgical Engineers, Petroleum Division, Galveston, Tex.

9-10—American Gas Assn., Annual Convention, New York.

16-20—National Safety Congress and Exposition, Chalfont-Haddon Hall, Atlantic City.

Week of 16—40th Annual National Automobile Show, Grand Central Palace, New York.

Week of 16—National Tax Conference, Palace Hotel, San Francisco, Calif.

19-20—American Institute of Mining & Metallurgical Engineers, Petroleum Division, Los Angeles, Calif.

November

8-16—National Motor Truck Show, Navy Pier, Chicago, Ill.

13-17—American Petroleum Institute, 20th Annual Meeting, Stevens Hotel, Chicago.

California Crude Oil Production

Two Weeks Ended August 26, 1939

	August Daily Quota	Average Daily Production	Excess
San Joaquin Valley			
Belridge—North	13,433	12,850	*583
Belridge—South	2,144	1,195	*949
Buena Vista	17,224	14,782	*2,442
Canal	5,795	5,949	154
Coalinga-East(Eocene)	7,440	7,832	392
Coalinga—East-West	16,140	12,511	*3,629
Edison	2,231	2,075	*156
Elk Hills	7,812	10,652	2,840
Fruitvale	6,178	6,009	*169
Greeley	2,910	2,235	*675
Kern Front	7,538	7,185	*353
Kern River	8,530	3,380	*5,150
Kettleman No. Dome	35,652	53,270	17,618
Lost Hills	4,141	3,160	*981
McKittrick	3,927	3,805	*122
Midway	37,990	39,115	1,125
Mount Poso	10,430	11,152	722
Mountain View	9,418	10,103	685
Rio Bravo	7,680	7,870	190
Round Mt. and Coffee Canyon	8,068	8,197	129
Ten Section	9,187	9,959	772
Wasco	1,205	1,201	*4
Other Fields	3,957	4,033	76
TOTAL	229,030	238,520	9,490
Coastal Counties			
Elwood	3,975	4,085	110
Rincon	2,483	2,540	57
Santa Maria	8,470	4,347	*4,123
Gato Ridge	2,552	1,428	*1,124
Santa Maria Valley	19,678	9,768	*9,910
Santa Paula-Newhall	5,739	6,064	325
Ventura Avenue	31,064	35,274	4,210
Other Fields	5,335	5,512	177
TOTAL	79,296	69,018	*10,278
Los Angeles Basin			
Alamitos-Seal Beach	7,042	7,328	286
Brea-Olinda	8,372	5,839	*2,533
Coyote—East	3,139	2,905	*234
Coyote—West	10,383	8,362	*2,021
Domingues	16,421	17,787	1,366
El Segundo	3,143	2,982	*161
Huntington Beach—New and Old	23,129	25,988	2,859
Inglewood	12,558	12,344	*214
Long Beach	41,652	45,908	4,256
Montebello	6,044	6,317	273
Montebello-West End	10,180	18,458	8,278
Playa del Rey	4,657	4,864	207
Richfield	7,662	7,811	149
Rosecrans-Athens	9,187	10,827	1,640
Santa Fe Springs	25,437	27,454	2,017
Torrance	5,532	5,282	*250
Torrance "34" and "D & B"	10,258	11,999	1,741
Wilmington	79,702	85,595	5,893
Other Fields	3,449	4,003	554
TOTAL	287,947	311,753	23,806
STATE TOTAL	596,273	619,291	23,018

*—Shortage.

If only half the nation's motorists use the change-over service available at service stations, operators will spend the equivalent of 530,204 eight-hour days providing free service.

Airplane parts will be standardized throughout the world. It is believed that plane, engine parts and fuel specifications will be chiefly affected.